Railway Age

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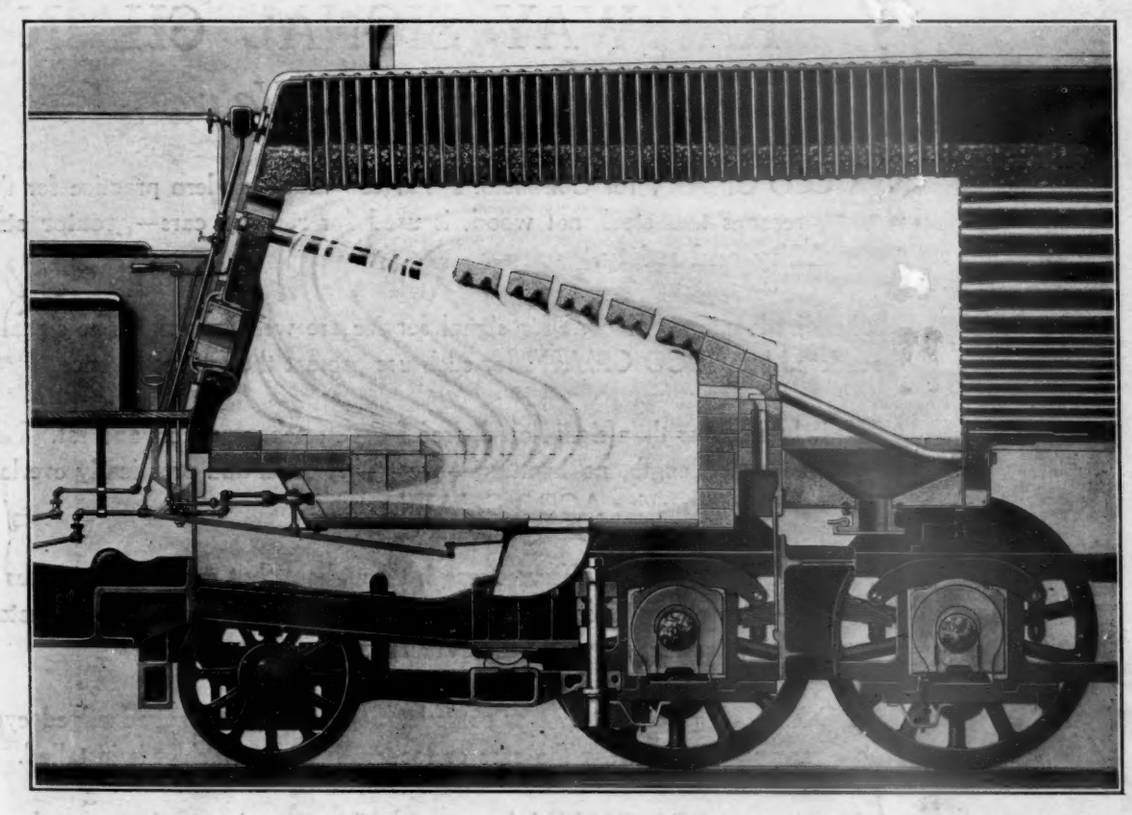

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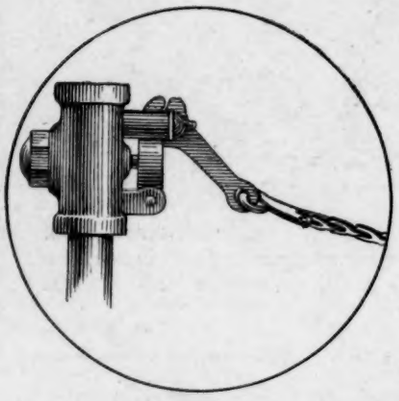

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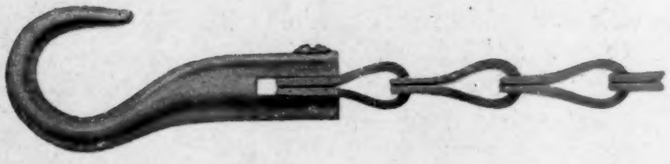

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EDITORIAL

Railway Age

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Railway Business Association Dinner

The Railway Business Association chooses wisely in planning a dinner at which to consider, not disappointments or apprehensions regarding the attitude of the government, but opportunities and responsibilities of the railroad managers and of the interests influential in shaping the policies of the railroads. Whatever the future holds forth, facing the future with confidence is the first requisite toward successfully grappling with it. The second requisite is the need for generous and wholehearted co-operation. Competition there will be between different railroad companies and between different railway supply companies, and struggle there will be between the buyer and the seller of railway supplies, but the essential fact remains that the best interests of the industry as a whole require the co-operative effort of all engaged in it. The annual dinner of the Railway Business Association affords a common ground on which competitors may meet and from which the broader aspects of the industry may be viewed. In attempting to arouse interest in the problems confronting the railroads, the Railway Business Association has performed a useful function. It was at a Railway Business Association dinner that the late James J. Hill made one of his most truly prophetic speeches. The problems of the reconstruction of individual railroad organizations is a pressing and immediate one; nevertheless, it would be short-sighted for a railroad executive to become so engrossed in his own immediate problems as to lose sight of the broader problems of the transportation business. Optimism and confidence apparently are to be the keynotes of the Railway Business Association's dinner this year, and optimism and confidence are certainly needed by railroad officers.

The Shoe on the Other Foot

An interesting illustration of the new order of conditions created by the return of the railroads to private management and adoption of the new transportation act is furnished by Reduced Rate Order No. 1 issued by the Interstate Commerce Commission on March 5. The new law provides that during the six months' period during which the government is to continue the present guaranteed standard return to the railways until rates can be adjusted to meet the increased expenses which have come about during the past two years, as well as to meet the 5½ per cent standard set by the new law, the present rates shall not be reduced without the approval of the Interstate Commerce Commission. This provision was inserted in the law not only to prevent action by state authorities to restore the rates in effect prior to federal control, but was also doubtless inspired in part by statements made by Commissioner Clark of the Interstate Commerce Commission in his testimony before the House Committee during the consideration of the proposed legislation that it might be well to do something to prevent rate-cutting by the railroads, or at least by some of them, upon the resumption of competition. The return of the railroads to private management was expected to result in an increase in competition particularly because it was made necessary for some of the railroads to recover traffic that had been diverted from them during the period of federal control, and Mr. Clark foresaw that some traffic managers would consider rate-cutting the easiest way of getting traffic back to their rails. Reduced Rate Order No. 1 prescribes in detail regulations under which carriers must apply to the commission for approval for a reduction in a rate prior to September 1, which applications, according to the order, must contain a complete and accurate statement of the reasons advanced by carriers and justification of the reduction sought to be established. The interesting feature of this order is that it is very similar in form to the fifteenth section order issued by the commission in 1917 after Congress had adopted the amendment to the fifteenth section proposed by Senator Hoke Smith of Georgia, which prohibited carriers from filing tariffs containing an increased rate without the approval of the Interstate Commerce Commission. The purpose of the Smith amendment was to make it more difficult for railroads to increase rates. Under present conditions the government, being sponsor for the earnings of the carriers for six months, finds it just as necessary to see that it is not too easy for a railroad to reduce a rate.

Are Labor Conditions Improving?

The outstanding feature of the March meeting of the Central Railway Club was the optimism that was manifested during the discussion of the labor situation. While most of the speakers treated the question from the mechanical department viewpoint, the conditions in the shops are probably not dissimilar to those in other departments. The developments during the period of the war and of government control have brought such basic changes in the shop organizations that the problem of keeping up production has been a serious one. The demand for mechanics for war work, the elimination of piecework, the introduction of the eight-hour day and the national agreement have all had a tendency to disrupt the established shop organization. The result in most cases has been a lowering of production—in fact, in some shops the man-hours per locomotive repaired in 1919 were twice as great as in 1917. With this in mind it is hard to find the basis for optimism. Nevertheless, there are encouraging signs. The labor organizations seem to have awakened to a realization of the fact that higher wages merely bring an increase in the cost of living. Recently serious strikes were threatened, but in the end sane counsel prevailed, and this in itself is the strongest kind of evidence that radical leaders will not be able to dictate the policy of American labor. The discussion of the problem of rising costs has given the laboring man a clearer conception of the fundamentals of economics. When the workers generally come to realize that the only way to permanently better their condition is to increase production, the days of the labor agitator are numbered. There are radicals in the ranks of labor, but they form a small minority. These agitators have attracted attention out of all proportion to their numbers and their influence has been overestimated. Perhaps this can be illustrated best by citing an example. At a certain shop there appeared to be strong opposition among the employees to an order which the officers considered by no means unreasonable. Finally a vote was taken on the question. Of the 750 men employed, only 107 were sufficiently interested to attend the meeting, and of these only 43 opposed the company's rule.

The Pennsylvania's New Organization

THE NEW SCHEME of organization of the Pennsylvania divides the system into four regions, each in charge of a vice-president. This is a radical change but even more radical is the breaking down of divisional walls and the establishment of a departmental system. The Pennsylvania, in contradistinction to the New York Central, had always adhered closely to a divisional organization. In the last five years prior to government operation, this divisional organization had been an obstacle in the process which was going on of greater and greater concentration of authority in the executive officers at Philadelphia. The present adoption of a departmental system was not wholly a question of standards, although standards in both maintenance of way and maintenance of equipment are considered essential in the smooth and economical operation of this vastly complicated transportation machine. Standards could be enforced even with a strictly divisional system, as has been proved conclusively on the Southern Pacific. The difficulty on the Pennsylvania appears to an outsider to have been the growing impossibility of getting anything done quickly.

Promotion on the Pennsylvania was in a great majority of cases necessarily very slow. A man got drilled into him respect for traditions and for authority long before he arrived at a position of authority and responsibility. Furthermore, the intricacies of operation of such a complicated machine as the Middle division of the Eastern Pennsylvania grand division were so great that a superintendent had little or no opportunity to get outside his work or to use individual ingenuity. Neither could he hope to get into the technicalities of the engineering and motive power departments, to say nothing of the traffic, accounting and purchasing departments.

Nevertheless, the superintendent and general superintendent were the officers with authority and responsibility for the entire management of the division and the grand division, respectively. Slowly, almost imperceptibly, there grew up walls about each division. Maintenance of responsibility and authority demanded that orders should go down from the executive department through a considerable series of officers before reaching the local man on the job.

Thus two opposite kinds of difficulties were developed. On the one hand it became increasingly difficult for the public and shippers to get immediate action when dealing with local officers, because of the excessive centralization of final power at Philadelphia and Pittsburgh. On the other hand, it became increasingly difficult for an officer of a department other than the operating department, to get at the member of the divisional staff who had local charge of the work of this department.

One of the most admirable features of the Pennsylvania organization was that promotions were exclusively from within the ranks and that a man who did faithful work was assured of a good job until old age and a generous pension when he retired. It is well understood that such a system as this of necessity means the accumulation of a certain amount of deadwood. The United States regular army in peace times had the same thing happen, and unless a ruthless system of cutting off the heads of older men to make way for the younger ones is adopted, it is hard to see how the accumulation of deadwood can be entirely avoided.

On the other hand, under this departmental system which the Pennsylvania has put into effect, deadwood will be called to the attention of the management more quickly. An accounting officer who is on the payroll of the accounting department, but is attached also to the staff of the general superintendent, will be less likely to be able to drift along year after year in a rut than he would be were he accepting general theories of practice from an accounting department which was quite impersonal to him and was doing his work in such a way as to be personally acceptable to a general superintendent whose personal thought was taken up with many other matters rather than accounting.

The establishment of regional vice-presidents should bring about quicker action on local matters. The organization of the local officers in each region under a department system should make the personnel more quickly responsive to the will and guidance of the executives in charge of each department. The very fact that such a drastic change has taken place will be conducive of new interest and new life.

"Everything Fixed But the Rates"

IT HAS BECOME a common joke among railroad officers to remark, after one of the conferences at which they are popularly supposed to agree so readily and harmoniously on a general rate advance, that "everything is fixed but the rates" and that they will require more conferences. The remark is particularly applicable to the present railroad situation, although there are several other things to fix besides rates. While the railroads are given a guaranty for the next six months based on the net operating income that they earned in the three years ending June 30, 1917, there are possibilities of many a slip before they can get the benefit of the 5½ per cent on their aggregate value which so many men who ought to know better persist in telling the people is a guaranty on railroad securities, and which many others who probably know no better, but have more regard for the truth, say is not even a promise.

We have the deepest sympathy these days for the man in the street (whether it be Wall Street or just any street) who is still trying to make up his mind whether to buy railroad stocks, and has not long ago passed them up for oil, movie, motor, candy or silk hosiery securities. The railroads badly need his investment, but in the face of the bewildering maze of contradictory statements which he reads in the public prints or hears from the political campaign or lecture platform there is little cause to wonder why this particular capital is timid. First he was told by such men as Senator LaFollette that if the railroad bill were passed railroad stocks would go kiting. The bill was passed, but the resulting movement in stocks amounted to scarcely more than a turning in the grave with surprise that Congress had done something to improve a bad situation instead of making it worse.

He reads in the papers every day that some one of national reputation, or at least some one whose views have been given nation-wide publicity, says that railroad securities are not only guaranteed against loss but assured of a 5½ or 6 per cent return. Yet stocks that used to be sold in the markets at par, when their companies were handling less business than they are now, are seen to rise perhaps from 28 to 36, as Baltimore & Ohio did. Time was when the railroads used to besiege the Interstate Commerce Commission for a year or two for a 5, 10 or 15 per cent increase in freight rates, yet when the commission on its own initiative announced a hearing on March 22 to consider what steps it shall take, without even waiting for the railroads to propose tariffs, most of the newspapers did not bother to mention it. Glenn E. Plumb had already assured the country that the increase will amount to from 25 to 50 per cent, so what's the use of using up print paper to discuss a mere hearing on it? Consequently, that bit of news caused no commotion in the stock market, or perhaps it was offset by the fact that nearly two weeks before the rate hearing the railroad managers went into conference with the executives of 17 railroad labor organizations who say it will take at least another billion dollars a year to settle with them.

Along comes a ticker bulletin saying the Supreme Court has decided that stock dividends are income and are taxable. The man who might like to buy some railroad stock has

hardly time to recall that a stock dividend and a cash dividend on stock are two different things, but that he has heard little of either in connection with railroads for some time, when another bulletin comes through saying that the Supreme Court mumbled its words, that the reporter at Washington had a mental aberration, that the wires were down, and that the court has finally stated in plain English that a stock dividend is only another piece of paper and not taxable until it is converted into cash at a profit. However, the time required to make the correction has been sufficient to give warning that railroads are not declaring stock dividends these days and that we are paying income and war taxes in part so that the government may guarantee the income from which they are paying such dividends as they do pay, while paying the wages they pay and waiting for the increase in rates that LaFollette and Plumb tell us is already guaranteed.

When the excitement over the various stock dividend decision by the news services and by the court dies down, the attention of the would-be railroad stockholder and special-privileged all-around plutocrat is drawn to another bulletin from Washington. This time the benevolent Supreme Court has done something for the railroads. It has decided in the Kansas City Southern case that the Interstate Commerce Commission must value the railroad lands at their present worth instead of their original cost. It sounds reasonable enough and should make quite a difference in the basis on which the Interstate Commerce Commission is to calculate the so-called guaranty of "as nearly as may be" 5½ per cent. It looks as if the court has really removed one of the flies from the guaranty ointment and railroad stocks begin to move. Incidentally, New York news editors begin querying their Washington offices: "Associated Press carries very little on important railroad valuation decision."

But by that time the court's proof of its decision had been sent to the printer, only one or two reporters remained in the court room after the stock decision, and two or three days are required for the fact to percolate into print that the court has merely directed a lower court to direct the Interstate Commerce Commission to obey that provision of the valuation act of 1913 which provides that it shall report the cost of acquisition and damages in connection with the condemnation purchase of land in addition to its orginal cost and present value. The commission is required to receive evidence on this point, and we understand also to take it under consideration, but what it is to do with the facts after it ascertains them is left as much in the dark as ever. In any event it will hardly have completed the process during the six months within which it is expected to readjust the rate level.

While some of the newspapers were prodding their Washington correspondents to find out what the court had actually decided, others were displaying their enterprise in a more direct manner by dilating on the stupendous importance of the original decision of the Associated Press and obtaining interviews from prominent railroad executives and engineers (not lawyers) as to how many millions or billions would be added to railroad values if the court had decided what it was reported to have decided. One leading financial paper printed on Tuesday that the court had upheld present value as against original cost; on Wednesday it showed what the court had decided, and said it was an important decision; on Thursday it said that the effect of the decision, while of far-reaching importance, had been greatly exaggerated, and on Friday it printed another story saying that, in the opinion of leading railroad officials, the decision was a favorable decision of great importance. We are not trying to criticize the newspapers; the *Railway Age* itself was so unfortunate as to have published an editorial based on the original incorrect version, although it gave the correct information in its news reports.

Meanwhile, the man in the street, if he has not already climbed a tree, is still trying to figure out why he shouldn't gather in some of the easy money that is sure to come from the boom in railroad stocks as soon as the full effect of the beneficent new railroad law is fully appreciated. But the anxious pauses between bulletins from Washington are sufficiently protracted to make him wonder what the valuation proceeding has to do with rates anyway. Haven't La Follette, Plumb, Bryan, and most of the Democratic members of Congress, to say nothing of Arthur Brisbane, already told him without the slightest fear of successful contradiction that the railroads have already been guaranteed 6 per cent on all their securities, water and all? What is a small matter like a decision of the Supreme Court of the United States, reversing that of the Court of Appeals, and also that of the Supreme Court of the District of Columbia, and commanding the latter to issue a writ of mandamus to compel the Interstate Commerce Commission to receive certain evidence which the Kansas City Southern will be glad to furnish as to the expenses incident to condemnation proceedings and rights of way agents, as well as the damages paid for building a railroad across the corner of a man's farm and thereby saving him a long wagon haul—what does all this amount to, even if it does save the other railroads the necessity of similar litigation, as compared with a 6 per cent guaranty on eight billion dollars of water, signed and sealed by Congress and approved by the President of the United States? Is it any wonder that our friend, the prospective investor, decides to go and buy a "flivver" or to give his money a short joy-ride in oil stock or a longer one in German marks?

Perhaps Senator LaFollette and Mr. Plumb, as well as the newspaper men who report the Supreme Court, sometimes make mistakes, and perhaps, just as thousands of newspaper readers now know the difference between a stock dividend and a cash dividend, which even the Bureau of Internal Revenue of the United States Treasury Department did not know before, some day they, too, will find out that the Esch-Cummins railroad law is a better law than we have had before, but that it does not give anybody something for nothing.

The application of the word "guaranty" to the rate-making rule of the transportation act recalls the experience of a man who bought a used automobile about the first of December, rebuilt by the agents of the manufacturers and accompanied by "the original guaranty." He used the car very little during the winter, but about March 1, on reading his "guaranty," he found it to be the standard "warranty" of the National Automobile Chamber of Commerce, which guarantees each new motor vehicle to be free from defects in material and workmanship "under normal use and service" for 90 days, but makes no warranty whatever in respect to tires, rims, ignition apparatus, horns or other signaling devices, starting devices, generators, batteries, speedometers and other such important equipment, inasmuch as they are usually warranted by their respective manufacturers.

The transportation act extends the guaranty which was agreed to be paid during federal control for the next six months, and after that time it provides in Section 422 that the commission shall initiate, modify, establish or adjust rates so that they either as a whole, or as a whole in each of such rate-making groups or territories as the commission may establish, will, "under honest, efficient and economical management, and reasonable expenditures for maintenance of way, structures and equipment," earn an aggregate annual net railway operating income equal "as nearly as may be" to a "fair return" upon the aggregate value, which the commission is also authorized to determine; provided that for two years the commission shall take as such fair return 5½ per cent and may add not exceeding another ½ per cent. In other words, the commission is to fix the rates and then the railroads will each endeavor to earn what it can from them. If any one earns more than 6 per cent it gives up

half of the excess. If it does not earn 6 per cent it may borrow from the government at 6 per cent. There is no guaranty in the absence of "honest, efficient and economical management and reasonable expenditures"; and freedom from floods, washouts, drouths, strikes or business depression is not separately warranted by the manufacturers thereof.

Some of the points of difference between a real guaranty and the standard of reasonableness set up by the law are illustrated by the fact that the Pere Marquette Railroad has just decided that it can do better without a guaranty than with one, and has not filed with the Interstate Commerce Commission its acceptance of the six months' guaranty which it could have by agreeing to give up anything it earned above that amount while the Union Pacific has applied for the guaranty and agreed to turn over any excess to the United States Treasury.

The Union Pacific during the year 1919 earned 138 per cent of its guaranty and the excess went to reduce the government's deficit from most of the roads, but it may not be able to retain all of the traffic it enjoyed in 1919. Moreover, if it did not accept the six months' guaranty it would at once come under the rule of Section 422 and have to give up to the treasury half of any excess which its guaranty may produce above 6 per cent on its value, for the year beginning March 1. If it accepts the temporary guaranty the division of excess earnings does not begin to apply until September 1.

In other words, the Union Pacific would rather have the amount of earnings which it made unaided in 1915, 1916 and 1917 than the new so-called guaranty of 5½ per cent on aggregate value with a string tied to it. The Pere Marquette, which in 1919 earned 179 per cent of its guaranty, prefers to take its chances without any guaranty of any kind.

Economical Use of Parlor-Car Space

THE MERCHANTS' LIMITED EXPRESS of the New York, New Haven & Hartford is now made up so as to accommodate smokers better than formerly, while yet the wasteful practice of running a whole car full of free seats is avoided. This train has ten cars, including two diners, and the problem of making all of its facilities convenient is rather complicated. It is not perhaps so large a problem, but must be fully as troublesome, as that of the English railroad in former years with local passenger trains, which had to accommodate six classes of passengers; first, second and third ordinary, and first, second and third smokers. The American parlor-car train must give all passengers opportunity to eat a full meal at leisure and in luxury, and must provide smoking and non-smoking space for most of the male passengers. (How soon the females will demand the same remains to be seen.) At the same time the economical-minded manager, having powerful locomotives, feels bound to deny himself the luxury of five-car trains if he has passengers enough at one time to fill ten cars; so the question how to give passengers what they want without requiring them to make long foot journeys from one car to another is not easily settled. The New Haven road's plan, explained in another column, is evidently an experiment; but it is a hopeful one. About two-thirds of the club car seats will be charged for. With part of the passengers in a car paying for their seats and part not paying, the conductors and porters may have occasion to exercise a little diplomacy now and then; but they will be equal to it, no doubt. War-time practice may be accorded the credit of having in this case brought out into a strong light one big leak—the movement of a 70-ton car 234 miles (several times a day) without a cent of revenue. There is still ample opportunity for enterprising managers to utilize other war lessons.

Letters to the Editor

Safe Speeds on Curves

WINNIPEG, MAN.

TO THE EDITOR:

My attention has been attracted to the report of the derailment of a passenger train on the Southern Pacific at Vincent, Cal., abstracted on page 489 of your issue of February 13. The reasoning of the engineer who made this report reminded me of the Swede who went into a liquor store (previous to July 1, 1919) and asked the clerk if he had any squirrel whiskey. The clerk said "No," but that he had some Old Crow, to which the Swede replied:

"Yumping yimminy, aye don't want to fly, aye yust want to yump around a leetle."

The reason that I am writing this letter is that to the non-technical man this report may seem plausible, and some of our railway presidents and managers may arbitrarily order that curves be elevated for the speed of the fastest trains, which would bring about disastrous results. The statement is made that "the speed of a train seldom reaches the point where it actually overturns; long before such a speed is reached the speed is sufficient to cause the equipment to rock back and forth until finally the wheel climbs the rail and results in derailing the train."

I know of one case where a young brainless freight engineer was in charge of an engine hauling an excursion train, and he ran down a hill at a speed of 60 to 65 miles per hour until he struck an 11 deg. curve elevated about 5 in. and the coaches actually turned over. This is not guessing. The section men who were working near the location saw the train coming and ran for their lives. It was also witnessed by a farmer and some of his family who lived close by. I have seen and heard of many derailments caused by wheels mounting the outer rail on account of the elevation being too great for the speed, but this is the first time that I have ever heard of the reverse. Some twenty years ago I was acting superintendent of a mountain section of newly built railway crossing two ranges of mountains. The grades were 2.2 per cent and the maximum degree of curvature 14 deg., with a maximum elevation of 4½ in. We had a schedule of 25 miles per hour, but as that speed could not be maintained on the up grade the result was that our passenger trains often ran 37 miles per hour down the hills. I was personally very often on these trains when such speeds were made, and I can assure you there was "no rocking back and forth." We later reduced the schedule speed, not so much for fear of derailments as for fear of breaking a rail or flange, as most of the equipment used was carried on cast iron wheels. Imagine this condition and decide for yourself which is the safer—riding 40 miles per hour over an 8 deg. 10 min. curve elevated 4¼ in. or riding 20 miles per hour over the same curve elevated 8½ in. The outer rail must be depended on to guide the equipment around the curve regardless of the speed and the greater the vertical pressure of the wheels on this rail the less the liability of the outer wheels mounting the rail.

For a further discussion of this last-mentioned feature see page 931, Volume 20, of the American Railway Engineering Association proceedings.

J. G. SULLIVAN,
Consulting Engineer.

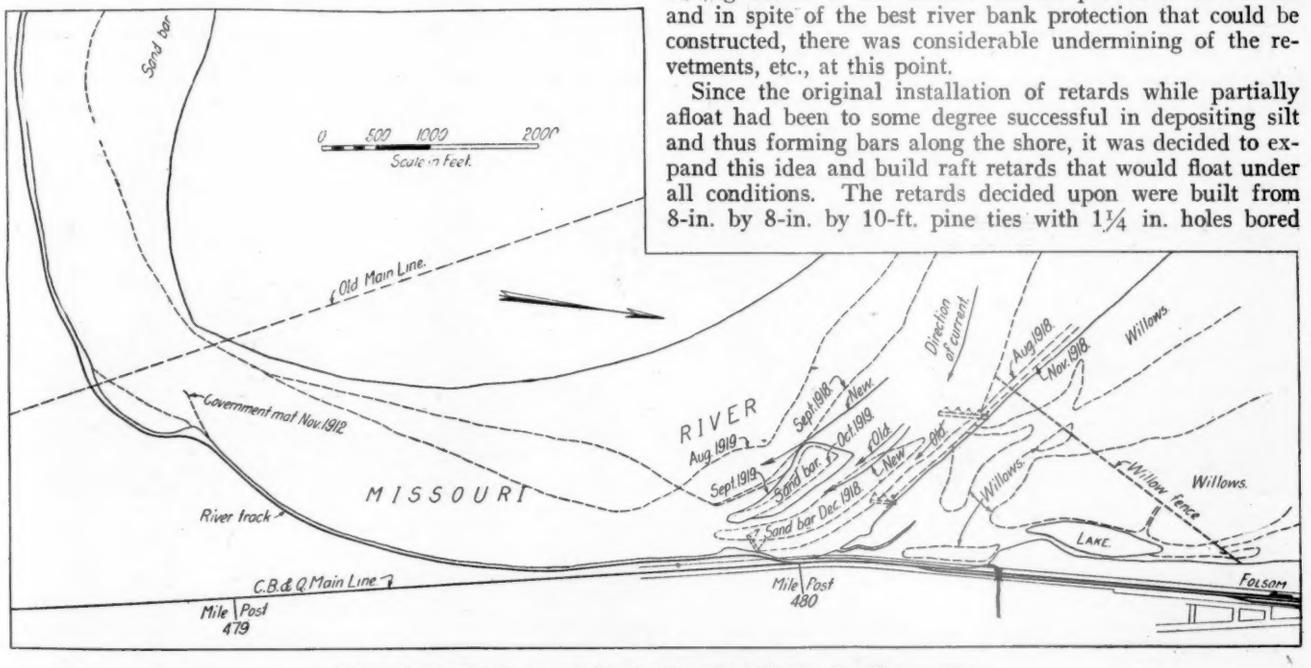
HANDLING FREIGHT COSTS MORE.—With the cost of everything mounting, it is not reasonable that freight can be handled as cheaply as in pre-war times.—*Wilmington Dispatch.*

Flexible Rafts Protect River Banks from Cutting

Chicago, Burlington & Quincy Installs Improved Type of Current Retards on the Missouri River

ONE OF THE LATEST DEVELOPMENTS in river bank protection is that of flexible rafts anchored in position but free to give with the rise and fall of the water which is now being tried out by the Chicago, Burlington & Quincy in the protection of the east bank of the Missouri river near Folsom, Iowa, about 14 miles south of Council Bluffs, Iowa, and on the main line between that point and Kansas City. It is expected that these rafts will take the place or at least render more permanent the far more expensive installations of mattresses, stone dykes and other forms of revetments, etc., used by the Burlington, having most of their advantage and few of their defects. It is believed that when the work is completed the expenditure will not run over a total of $14,000.

The old main line originally lay about one mile west of Folsom, the Missouri river being still farther to the west. In accordance with its well known property of changing course, etc., the river gradually cut its way east until in 1885 it became necessary for the railroad to construct a new line and abandon the old one through this section. The new right-of-way was thought at the time of the change to be far enough away to be free from further action of the river current, but the cutting continued until the Missouri river formed a loop, the eastern end of which reached the present location of the main line, paralleling it closely for a distance of approximately three-quarters of a mile.

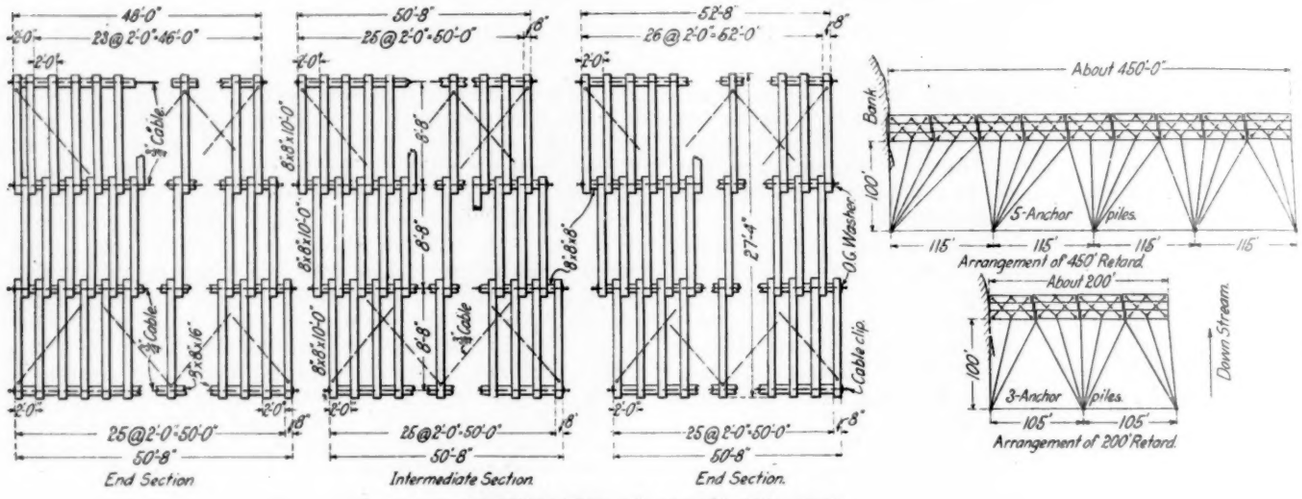


Map of the Threatened Bank Showing Rafts, Sandbars, Etc.

By an examination of the map it will be seen that the current entering the loop followed the west or far bank, but was deflected by it in such a way that it struck the eastern shore at a rather sharp angle, resulting in a severe cutting action at this point. Following this bank the current became narrower and more swift with resultant serious damage until it had reached a point where it became necessary to take strenuous measures to prevent its further encroachment. Log rafts were anchored in position at points along the bank above mile post 480 and the upstream edge sunk by unloading rock upon it, while the bank itself was reinforced and supported by brush mattresses, stone dykes, etc. This seemed for a time to be holding against the action of the current but on later examination it was found that the rafts and other types of retards had either sunk completely or so nearly so that they were doing but little good in deflecting the current. Along with this it was discovered that the center portions of the original retards had sunk, causing the current to split at a point about 1,600 ft. up river from mile post 480, one branch extending along the shore, rapidly cutting out the bar formed there and creating a narrow channel varying from 20 ft. to 30 ft. in depth and about 250 ft. wide at its widest point. The other branch turned to the west, a sandbar forming between the two branches which would have had a tendency to fix the two currents in their respective courses unless the river should be able to cut its way farther east in the future. The resulting action of the inshore current proved to be serious and in spite of the best river bank protection that could be constructed, there was considerable undermining of the revetments, etc., at this point.

Since the original installation of retards while partially afloat had been to some degree successful in depositing silt and thus forming bars along the shore, it was decided to expand this idea and build raft retards that would float under all conditions. The retards decided upon were built from 8-in. by 8-in. by 10-ft. pine ties with 1¼ in. holes bored in 8 in. from each end. These ties were threaded on ¾-in. cable of which four strands per section were used, thus giving a raft 27 ft. 4 in. or approximately three tie lengths wide, allowance being made for the distance from the ends for the holes. The ties were spaced 2 ft. center to center by using ties cut 16 in. long bored 1¼ in. the long way and placed between each tie on the two outside cables, with blocks 8 in. long of the same material on the two inner ones, the cable ends being pulled through heavy washers and held by strong clips at the ends of the section. The sections made were approximately 50 ft. 8 in. in length and braced by ¾-in. cables running from the corners to the opposite center on the long sides, and fastened where they crossed the ties by large staples, the ends being threaded through the corner ties and around the main cables where they are held securely in place by large steel clamps. In addition large timbers were made fast to the edges of the

rafts to act as floaters in case a large amount of debris should come down on the raft. This was done only on the upstream raft. This method of construction gave a raft not low the river bottom. The piles were spaced opposite the joint between every other section and formed approximately a 45 deg. angle with the shore. A short section was also



Detailed Plan of the Flexible Raft

only strong and durable but exceedingly flexible in every direction.

The handling of the rafts was simplified by building them on barges which were towed to the location desired, where the rafts were made fast by ¾-in. cables running from the centers and joints to anchor piles, each pile holding two sections and the barges pulled out from under them, old boiler flues threaded on light cables being used as rollers. Bignell reinforced concrete piles were used for anchors, being jetted down until their tops were approximately 15 ft. below the river bottom. The piles were spaced opposite the joint between every other section and formed approximately a 45 deg. angle with the shore. A short section was also added to the shore end of each raft which was fastened both to the raft proper and to deadmen ashore by means of cables, the idea being to increase the length of the raft so that with the advent of high water there would always be one end of the raft resting on the bank. As a protection against the possible chance of current washing around the shore end, mattresses made from bundles of willows were sunk along the bank by unloading rip-rap on them.

Four Views of a Raft Installation

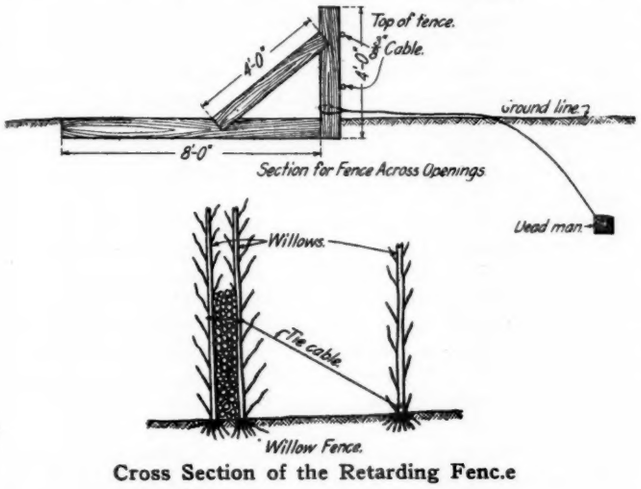
Bringing Up a Section on Barges
The Shore End and Bank Protection

The Completed Raft in Position
A Sandbar Formed Downstream

The completed installation consisted of three separate retards spaced along the bank approximately 1,250 ft. apart.

The upstream raft or raft No. 1 which was 450 ft. long and consisted of nine sections was anchored to five piles, the shore end being about 2,200 ft. from mile post 480. Rafts No. 2 and 3 were each of four sections and about 200 ft. long, raft No. 2 being anchored slightly upstream from where the diverted or split current struck the bank and the cutting action was especially severe, while raft No. 3 was installed near a small point of land that was being rapidly undermined by the swift current of the river, the channel being narrowest at this particular spot.

The actual retarding of the current was not affected so much by the rafts themselves as by the installation of aprons on the downstream edge. These aprons consisted of panels constructed of willows from 12 to 14 ft. long set up and



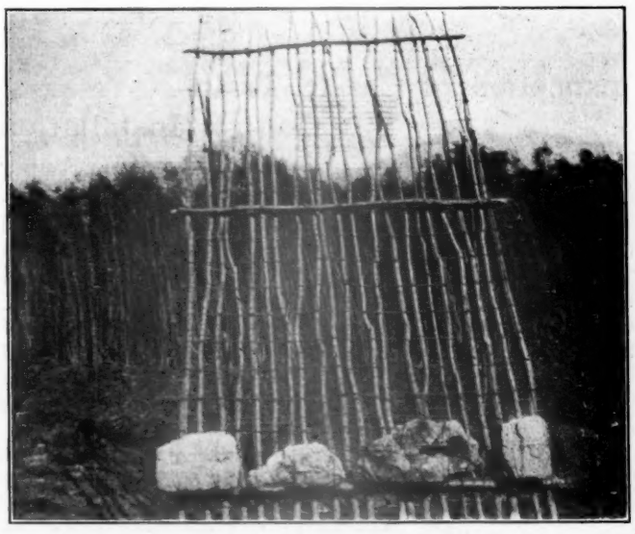
Cross Section of the Retarding Fenc.e

down, well braced and interlaced with wire fencing, each panel being about 7 ft. wide with three cross pieces. The entire apron was weighted down by the addition of large stones held in position on the bottom brace by looping the fence wires around them. The completed aprons were then lowered over the downstream side of the raft and the upper part fastened by wire braces running back some 10 ft. from the edge of the raft and of such a length that the raft could have considerable movement without disturbing the apron. After the stones weighting the aprons have become embedded in the sand and deposited by the current silt and after enough has been deposited to hold the aprons in position the wire braces will be cut, leaving the rafts free to rise with the water. The shallow inshore sections were handled by working willows into the river bottom without the necessity of constructing panels, lacing them together at the top with wire and making them fast to the raft in a manner similar to that for the aprons. As in the case of the floaters, raft No. 1 was the only raft to be constructed with aprons, including the inshore sections though the ultimate intention is to construct all of them in the same manner.

In spite of the low water at the time of the installation (0.4 below government low water datum), the action of the retards was at once noticeable. Soundings taken on the downstream side of raft No. 1 showed the water to be 4 ft. deep which, in comparison with its previous depth of 10 ft., indicated a fill or deposit of silt approximating 6 ft. in depth. Photographs taken still later after a fall of about 2 ft. in the river showed the peak of a large sandbar formed in this location which would indicate an additional fill or deposit of about 3 ft. between the time of the soundings and the taking of the photographs. The current was also deflected further to the west and was again split as in the old installation of retards. In this case the western branch of the current is cutting a new channel through the large sandbar which in the past has been built up on the opposite shore, while through the deflecting action of rafts No. 2 and 3 the current is being forced across the long narrow bar that originally split the stream before the rafts were installed, resulting in the gradual disappearance of this bar and the rapid cutting away of a larger bar which lies just west of it.

While the installation to date has proved very successful in the handling of the Missouri river at this point during low water, it has yet to be tried out during high water. However, as it was designed pre-eminently to retard high waters and as its action up to now has been along the lines planned, considerable confidence is felt by the officers in charge that it will do all it was designed to do. The contemplated action during high water is similar to that which is now going on, i. e., the forming of bars both under the raft and on the downstream side, leaving the raft floating free or practically free at all times. Where a large amount of debris, etc., fouls the upstream edge only the upper third of the section in question will be sunk, the depth depending somewhat on the amount accumulated, the tendency being to float the debris over the surface of the raft, due to its flexibility and the action of the current, with no one section being completely sunk for its full width. With the receding of the waters the raft may be left either entirely or partially supported by the bar formed, in which case there will be some cutting along the midstream edge that will continue until the raft is again completely afloat when, with the resuming of the retarding action, it will necessarily cease.

The triangle between the railway and the river bank is chiefly low land which overflows regularly at high water and through the fact that it has in the past worked its way east, cutting into the right-of-way and entering into the river



A Typical Retarding Apron

near mile post 480, considerable damage has been done to the mattresses and revetments placed along the shore at or near this point. In order to eliminate this trouble which would, no doubt, undo much of the good brought about by the rafts, it was decided to construct a willow fence to retard the overflow current. By reference to the map it will be seen that the proposed fence which is about 2,600 ft. long runs from a point on the bank about 300 ft. upstream from raft No. 1 to the edge of a cornfield and on a direct line to Folsom. The two ends of this fence are both on high ground, the intermediate surface being broken in character and covered with thickly-grown patches of willows. The top of the fence will be on a predetermined grade, about seven feet above government low water, and will be similar in some respects to a dam in that there will be no low spots to concentrate the overflow into a definite current.

The actual construction will be of two types following the

retarding principle rather than the actual damming of the water, since it is desired to build up this low land. A path one foot wide will be out through the heavy growth of willows, the cut pieces beng thrown lengthwise in the path and piled up to the height required, the fence thus formed being carefully tied and laced together by wire and braced with tie cables fastened at intervals along the fence and running upstream to the base of growing willows. Open places will have built-up fences with supports made from two 8-ft. cross ties, one length being laid in the ground on the lower side and at right angles to the prescribed line, the other being cut into two pieces to form the upright and its brace. Two 3/8-in. cables running lengthwise of the fence and securely fastened to the uprights, support the actual retards which are constructed from willows and wire fencing in a manner similar to the aprons installed on the downstream side of the raft. To prevent the built-up type of fence from washing out, it is anchored to deadmen set opposite each post and sunk to a depth of four feet. The tendency of this combination fence will be toward the building up or gradual filling in of the land lying in the triangle formed by the fence, the main line and the bank, and by the elimination of any direct current will overcome one of the chief obstacles with which the Burlington has had to contend, i. e., the washing out or undermining of the revetments, etc., from the shore side.

The river bank protection work was planned by and constructed under the direction of C. L. Persons, assistant chief engineer, and G. A. Laubenfels, district engineer, the contract for the work being let to the Wood Brothers Construction Company of Lincoln, Nebr.

Inspection of Casale Train Control Installation

OFFICERS of the Chicago, Rock Island & Pacific and of the Casale Safety Device Company, made an inspection and tests of the Casale automatic train control device which has been installed on the Rock Island between Blue Island, Ill., and Joliet, on Friday, March 12, a special train being used for this purpose. In the party were J. E. Gorman, president of the Rock Island, and other officers of the system representing the operating, mechanical, signal and engineering departments; James C. Regan, president of the Casale Safety Device Company, and other officers of this company.

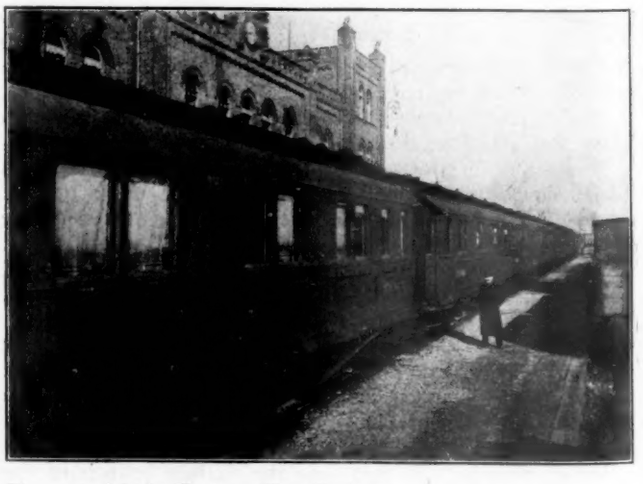
An installation of this device has been completed and placed in service on the suburban district of the Rock Island between Blue Island, Ill., and Joliet, protecting about 25 miles of double-track. On the run to Joliet, tests were made with signals placed in the caution and stop positions, respectively. Speed control apparatus is installed on the engines so that when a caution indication is received the speed of the train is reduced automatically to a predetermined point, which in this case is 30 mi. an hr. When the speed control apparatus becomes effective the speed is reduced to approximately 22 mi. per hr. before a full release of the air brakes is obtained. On the first test a caution indication was received and an automatic application of the air took place, reducing the speed of the train to the predetermined rate. The engineman then attempted to increase the speed, but was checked automatically whenever it reached 30 mi. per hr. After having received the caution indication and while running at a speed of approximately 25 mi. an hr. a stop indication was received at the next ramp which automatically stopped the train in about 300 ft.

On the return trip from Joliet an eastbound passenger train was ahead of the special, and the special received caution indications at three signal locations just out of Joliet. Signal 336, located near New Lenox, Ill., gave a stop indication and the train control apparatus automatically stopped the train. After the stop was made the engineman released himself and proceeded under control to the next signal location, where a clear indicator was received which permitted the engineman to proceed at speed. The speed was increased to 74 mi. an hr., the apparatus functioning properly at every ramp location.

The nearest end of each ramp to a signal location is approximately 160 ft. from it, and the ramp is 120 ft. in length. Each ramp consists of two angle irons placed face to face with a copper strip placed between the angles in order to provide a better electrical contact between the ramp and the engine shoe. Every ramp opens the local engine circuit whenever the shoe is raised in passing over it. When the ramp is energized the transmission of current through the shoe maintains the local engine circuit, thus preventing an unauthorized stop being made. The circuits are so arranged that the signal repeats the indication of the ramp.

The engine apparatus may be briefly described as consisting of a shoe for making physical contact between the roadside and the moving train; a three-position relay; a storage battery set of approximately four cells of the automobile type, an automatic electro-pneumatic valve and the speed control apparatus. The shoe is located on the frame of the trailer wheels of the locomotive while the relay and release buttons are located in a receptacle placed in the channel of the I-beams supporting the tender. The storage battery set is located in a separate receptacle alongside the relay receptacle and in the same location. The air-hose connection between the engine and tender is carried through armored hose.

An automatic electro-pneumatic valve is located just below the running board and ahead of the cab about three inches from the boiler. The valve operates to close normally the exhaust from the brake pipe and normally operates to leave the passage open from the main reservoir to the engineman's brake valve. It operates in the reverse method to make an application in the reverse positions by closing the flow of air from the engineman's brake valve and venting the brake pipes, giving a service application. This operation does not prevent the engineman from making an emergency application if he desires to do so. The speed control apparatus is located on the journal of the front wheel of the truck and by means of the governor, contacts are caused to open or close electric circuits, depending upon the speed of the train.



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The German Government Has Permitted the Use of Sleeping Cars for Hotel Purposes

The Annual Report of the Car Service Section, U.S.R.A.

Difficult Conditions Contended with; The Coal Situation; Car Pools; The Autumn Rush

AN ABSTRACT OF THE ANNUAL REPORT of W. T. Tyler, director of the Division of Operation of the Railroad Administration, to Director General Hines for the year 1919, as given out by the Railroad Administration, was published in the *Railway Age* of February 13, page 481, and that part of his complete report devoted to the work of the Mechanical Department was given in the issue of March 12, page 759. This article in like manner deals with the Car-Service Section; and other parts will appear in subsequent issues.

The prompt and marked decline in the demand for transportation which followed immediately upon the signing of the armistice affected in a very pronounced way the organization and the work of this section. This resulted, first, from the removal of the extreme stress of war necessity, which in many respects dictated the formation and guided the work of the organization, and, second, from the general falling off in business which took place in the first few months of this year. The primary problem of the Car Service Section, that of car shortage and how to meet it, was transposed very quickly in consequence into a problem of a car surplus and how to dispose of it. Activities of a strictly war nature were curtailed to a considerable degree, and the force of employees was correspondingly reduced, and this reduction was somewhat accentuated by the general decline in commerce and industry. The requirement for raw materials was at a low level, and construction of every sort, which all felt must soon start in considerable volume, was very slow getting under way. The inevitable result was that demands for transportation finally came with a rush, and the railroads had very soon to cope with an unprecedented volume of commodities awaiting shipment, and which was beyond their ability to handle in midsummer, and coincident with the beginning of this increase in industrial activity labor difficulties adversely affected the physical conditions of motive power and cars and further aggravated the situation. This is more particularly true with respect to cars, because of the larger number of units involved and the greater length of time necessary to recover lost ground. It has, under all circumstances, again been necessary to expand and revise the organization to meet the changed conditions and requirements, until today the Car Service Section has substantially as large a staff and is working along similar lines to those of a year ago, except that the stress is now entirely with respect to commercial business rather than primarily to meet the government's war requirements and, secondarily, commercial interests. Its function is to maintain a proper balance with respect to car distribution as between territories and between commodities and to meet such emergencies in car supply and transportation necessities as may arise from day to day.

In January last an important change was made in the method of freight-car relocation. Previously relocations were made by the Car Service Section as between railroads; thereafter the functions of the Car Service Section went only to relocation between regions, and each regional director controlled the relocation as between the roads under his jurisdiction. Throughout, however, the general distribution of equipment has been made under the direction of the Car Service Section. Under this central direction great freedom has been exercised in the movement of empty freight cars of various classes to meet emergency situations as well as the general requirements of the entire country. Reference to our report for 1918 will show that fully 850,000 empty-car movements were directed that year incident to car relocation. Figures comparative therewith for 1919 are not available, owing to the changed method of handling, but it is of interest to record that some 383,000 empty-car movements between regions have been accomplished upon orders of the Car Service Section.

Immediately following the signing of the armistice a surplus of all classes of cars developed. This reached its peak during the week ended February 23, when the surplus of cars totaled 506,569. It is worth while to note that this is the highest number of surplus cars ever recorded. The car supply remained constantly in excess of the requirements until in July. The increased movement of traffic which then commenced, and which has continued until the present time, except as interfered with by strike conditions, caused a very heavy demand for equipment. Much of this demand is to care for the movement of commodities which ordinarily would have moved during the spring months, and to that extent the present car shortage results from the endeavor of the shipping public to do in a period of six or eight months a business which under other circumstances would naturally have spread over an entire year. This increased movement of seasonal commodities, particularly for a very heavy grain crop, and unprecedentedly so in some sections, has greatly accentuated the car shortage.

The demand for cars for the loading of lumber and forest products and building and roadway materials, particularly lime and cement, has been extraordinarily heavy. The urgency of the cement movement practically ceased about December 1, and up to that time the volume moved within a given period was comparatively better than previous performance. It is a fact, however, that cars were not furnished at the large cement plants commensurate with daily orders. With respect to the lumber and forest products movement the situation is a little different. During the past few months the demand for equipment has been and still is in excess of the ability to provide, but if it were possible to provide, the railroads would then be unable to transport unless some other commodity were deprived of its transportation, so great is this demand, due undoubtedly to the generally low stocks locally and the sudden increase in construction deferred during and for some months after the war period. In the Puget Sound territory alone it is claimed the railroads are not meeting the requirements for lumber shipments by more than 35 per cent. This figure is capable of some adjustment, but at the best the car supply will probably not figure above 55 per cent of the demand. Notwithstanding this the principal railroads serving this territory show an increase in the number of cars of forest products loaded for the past four months of something like 20 per cent over the corresponding period last year, and at that time transportation and car supply for this commodity were given preference, due to war activities. The potential increase of the lumber industry has been remarkable, and it is not now within the capacity of the railroads to sustain this increase were it to continue indefinitely. Similarly there has been and still is difficulty in handling the lumber production of the South and Southwest, all of which, however, is receiving all practicable attention consistent with other demands.

Labor troubles in the phosphate fields of Florida interfered seriously with the production and movement of phosphate

rock from that section, in turn retarding the manufacture of fertilizer for the spring movement. This has produced a situation which it will only be possible to meet by preference in car supply, but even so it is likely that some demands for manufactured fertilizer may not be currently met. The difficulty will not, however, have been due to lack of transportation. Last season this situation was in much better shape, due to steadier labor conditions and continuous production and shipment through the slack period, so that as fall approached there were in stocks at the plants from 60 to 90 days' supply of rock.

In the Southeastern states a car condition has existed directly opposite to that of last year. Then there was a surplus of equipment in that territory, caused principally by the movement of supplies to the various Army cantonments; this year it has been necessary to provide a steady flow of empty cars into the South to protect the heavy outbound movement of lumber and other commodities. This indicates a reversion to pre-war conditions in this territory, for the Southeast has never been self-sustaining in car supply—that is, has never until last year made enough empties from loads received to care for its loading requirements.

The situation in eastern territory has also presented a marked change from conditions theretofore existing. By reason of the falling off in export traffic following the armistice and a heavy increase in merchandise traffic which finds its markets in the West, presumably due to curtailment of production during the war period, the westbound loaded movement for a time equaled or exceeded the eastbound loaded movement. This was something novel in American railroading and resulted in a shortage of cars in eastern territory. This tide has since turned and normal conditions again prevail.

Contemporaneously with the resumption of business activity within the United States came a heavy demand for United States owned equipment in Canada for loading to United States points. The movement of lumber and pulpwood has been particularly heavy and has required a constant flow of United States owned equipment empty to the Canadian roads. Very close to 100 per cent cars on line has been maintained on Canadian lines during periods of heavy shipping in the past two years, and this would not have been possible had not help been given in large measure by federal-controlled lines.

As box-car surplusages developed in the winter and early spring, advantage was taken of the prospective grain-car requirements of the summer and early autumn harvest season and storage for such cars was found in localities on or contiguous to the granger lines. Subsequently, or in April and May, definite steps were taken to specially condition these and other box cars for the movement of the 1919 grain crop, widely heralded as unprecedented. While the crop has not reached expectations, it has been very heavy and has imposed a heavy burden on the railroads. The movement has been protected generally to the ability of ports to handle and the primary markets to absorb, these being the real limiting factors in the situation. The latter is not true with respect to the primary markets of the Northwest, which were affected by the decreased spring wheat crop. Likewise Chicago has not been overcrowded. The conditions at primary markets were kept under control by the operation of the permit system, and it is but fair to add that conditions at Kansas City and Omaha have at times been affected by an inadequate car supply due to the great volume of traffic.

Another extremely heavy movement throughout the year has been that of live stock. Some difficulty has been met in providing transportation for the western sheep and cattle, due to early snows and lack of feed, and this has resulted in some delay in taking care of requirements as ordered. There have, too, been some local delays in car placements. Generally, however, the situation has been met in a satisfactory manner, and much better by a common use of stock cars than would otherwise have been possible.

Coal and Coke

The business depression affected the iron and steel trades particularly. This resulted in a considerably decreased consumption of all raw material used in these trades and a reduction in output of their mill products. Almost without exception furnaces and factories had large supplies of coal on hand, and this was quite generally the fact with all coal consumers throughout the country. The coal situation was made even more comfortable by the mild weather prevailing throughout the winter months, and the natural result was a progressive decrease in coal production, which finally reached the low point in April, 1919, when only 32,164,000 tons of bituminous coal came out of the ground. This was below the production of the corresponding month in the three previous years and only slightly exceeded the production of April, 1915, which amounted to 29,968,000 tons, and compares with 41,667,000 tons which must be produced each month on an average to reach an annual output of 500,000,000 tons, which coal operators estimate to be necessary.

During the first six months the railroads were constantly holding many thousands of idle coal and other open-top cars, but this surplus disappeared very rapidly after July 1. Following the month of April coal production gradually improved, and in July, under the stimulus of improved industrial demand, heavy increases began.

In September a goal of 11,000,000 tons production per week was set. From that time until the mine workers' strike on November 1 the production did not fall below this mark. In October the production reached approximately 55,000,000 tons, which may be compared with 51,000,000 tons produced in October, 1918, and 45,000,000 tons produced in October, 1917. The 1919 October figure sets a record as the greatest single month bituminous coal production in the history of the country.

Priority in car supply, which was a more or less regular necessity during the war period and applicable alike to coal cars as well as other classes of equipment, was discontinued promptly following the armistice, and during this year cars have been supplied for various commodities without discrimination.

The strike in the railroad shop crafts in August adversely affected the condition of equipment and for a time curtailed car supply. In September extraordinary efforts were made, and successfully, to recoup. A "drive" on coal production resulted in the weekly total being kept well over the figure which was claimed to be essential to the Nation's safety. Throughout, however, shippers of sand, gravel, crushed stone, forest products, and other miscellaneous materials were given their pro rata share of open-top cars based upon relative requirements. A temporary exception to this general rule became necessary in October, when developments indicated a strike of the miners on November 1, and prudence dictated a policy of preferred full-car supply for all coal mines in the two weeks immediately preceding the strike. The advent of the bituminous miners' strike on November 1 found extraordinary large coal stocks in the hands of railroads, dealers, and consumers. Incident to the drive for increased coal production an innovation was introduced with respect to securing prompt release of cars by consignees. Under existing demurrage tariffs the consignee is allowed 48 hours' free time in which to unload. A country-wide following up of consignees who took longer than this was undertaken with telegraphic reports of daily situations and free use of individual embargoes against consignees showing unreasonable delinquency. The statistics show a progressive decrease in the time held in excess of free time, and it is felt that this was

another contribution to the increased coal-car supply, and greater coal production in September and October.

The coal-zone plan established jointly by the Railroad and Fuel Administrations to so control the distribution of coal as to avoid the waste of transportation in unduly long hauls and cross hauls was abolished February 1. Another transportation economy of the war—the compulsory pooling of coal at tidewater and Lake ports—has also been discontinued. Under this plan shipments were made by the various consignors to "pools" of different classes of coal and consignments to each pool mixed upon arrival at Lake or tidewater points. This obviated the necessity of holding cars until a cargo of each consignee's coal was accumulated, and thus much car detention was eliminated while coal was being accumulated. Two years' experience has thoroughly demonstrated the efficacy of the plan. Some benefit is still being enjoyed by reason of voluntary pooling by shippers on a more liberal basis through the medium of organizations maintained by the Railroad Administration for that purpose. It is to be greatly regretted that the shippers of coal have deemed it inadvisable to continue the former arrangement, and every effort is being made to extend the scope of the existing methods of voluntary pooling.

In the Car Service Section annual report for 1918 mention was made of the establishment of uniform rules for the rating of coal mines for the purpose of equitably distributing empty coal cars during periods of shortage. A year's experience has amply demonstrated to both shippers and railroads that much good has been accomplished by such rules. The rules previously effective were made by individual railroads, varied considerably in their provisions, and were not infrequently unsatisfactory to railroads and shippers alike. The uniform rules agreed to by railroads and associations representing the mine operators have reduced disagreements to a minimum. Some revision of these rules has been made to care for changed conditions resulting from the war-to-peace transition and to embody the results of the year's experience and changes indicated thereby to be advisable. The rules as revised became effective January 10, 1920.

It seems desirable also that special emphasis should be given to the results of the second year's operation of what is known as the Eastern Railroads Car Pool. This pool was created in December, 1917, and included the open-top cars (except coke cars) of all railroads embraced in the Eastern, Allegheny, and Pocahontas regions, with the exception of the Virginian Railroad. Through a central office and a manager at Pittsburgh, Pa., it controls distribution as between railroads of approximately 650,000 open-top cars. It has been the means of eliminating a large amount of empty car haulage which follows the handling of open-top cars under ownership rules such as previously protected these cars for the owners' use. The cars are now used in common by the contributing roads in accordance with their relative requirements and other factors necessarily to be considered in connection with the transportation situation in the entire pool territory. The operation of the pool has resulted in an equalized supply of cars for each member line not possible to be brought about by any other method, and through the elimination of unnecessary empty car haulage maximum utilization is secured from the equipment. Particularly has this plan of operation been indispensable during the period of intensive coal production, and the "drives" would have fallen short of their attainment but for this agency. One difficulty with its operation is the matter of car maintenance; there are many different standards, hence different parts, and the matter of running repairs presents a real problem. There is so much merit in the common use of these cars within the limited areas, both in point of coal production and saving of transportation, that it is believed possible and practicable to work out a voluntary arrangement between the railroads concerned by which proper maintenance may be assured and benefit thereof retained. Arrangements for continuation of the Eastern Open Top Car Pool should by all means include proper provisions for maintenance of the cars by using lines whether owners' or others to the greatest practicable extent.

Refrigerator-Car Department

This department, with headquarters at Chicago, has charge of the distribution of the railroad-owned refrigerator equipment of the entire country and works in close co-operation with those in charge of privately owned refrigerators that maximum results for the perishable movement as a whole may be maintained. Its problem throughout 1919 has been to provide refrigerator transportation facilities for a heavily increased tonnage of perishable foodstuffs, with practically no increase in the particular type of equipment necessary for such transportation. Of fruits and vegetables alone this increase over the tonnage handled in 1918 was more than 20 per cent. Furthermore, this increased production was mostly in agricultural districts farthest removed from markets and involving in consequence an increased haulage of more than 20 per cent over 1919 in the aggregate.

The handicap of what would ordinarily have been considered a deficiency in equipment units has been overcome by more effective utilization of the equipment available, and this traffic, so essential in the nation's and world's food program, has been given such service as has been necessary to protect against loss account of insufficient car supply. A possible exception may have been the wine grapes in California, which, to the extent of approximately 30,000 carloads, and due to change in federal laws with respect to prohibition, were offered for transportation this year, whereas previously these had been absorbed by nearby wineries. These were, however, largely moved.

There were threatened losses in the early potato crop of Idaho, the peach crop of Arkansas, the cantaloupes and potatoes in Colorado, the melons and other fruits of California, and latterly the apples of Wenatchee and Yakima, but so far as known all have been given reasonable transportation, and in most cases there have been no actual failures to supply cars when and where wanted. Weather conditions and irregular coal movements and other difficulties growing out of the coal strike temporarily interfered somewhat with full car supply in California in December. This is being overcome. The Florida crop has been fully protected up to this time.

It may be well to point out, in view of our experience this past year, that there must be immediate provision for additional refrigerator cars to compensate for the decreases in the number of such cars during the past few years. Not only this, but many of the cars now in service should be made more efficient as refrigerator cars. Common use of all cars of this type to the greatest possible extent will make up for some deficiencies in ownership, but there are limits to the benefits thus obtainable. It seems desirable that such common use should continue at any rate in order to keep down to the safe minimum the number of refrigerator cars necessary to be kept in service.

Embargoes and Permits

Beginning in January, 1919, it was arranged that all except general embargoes should be authorized and supervised by the respective regional directors. Contemporaneously the zone system of transmission of embargoes through zone chairmen variously located throughout the country and in effect for the previous year was abolished and distribution thereafter made through regional directors. Otherwise the system has been maintained as originally inaugurated. The necessity for embargoes during the first half of the year was negligible as cmopared with 1918. The embargo was utilized freely to prevent congestion and delay to equipment at the time of the

shopmen's strike in August and the strike of the British railway employees in September. This latter seriously affected ocean shipping, and accumulation of export freight at seaports would have resulted had the movement not been properly restricted. Embargoes were also effective in controlling traffic and avoiding accumulations during the strike of steel workers at various points in October and again during the coal miners' strike.

The permit system of traffic control so successfully inaugurated two years ago, and operated since then as occasion has demanded, has further justified itself during the past year. Early in the year, due to the unprecedented oil well development at Burkburnett, Tex., and vicinity, oil-well supplies and traffic of every nature was rushed into that territory promiscuously and without limit. The "permit" system of control was brought into use and prevented what otherwise would undoubtedly have been an utterly chaotic condition. The control of export traffic has been maintained under the permit plan, and is recognized as the only effective means of preventing congestion at the ports. As the grain-shipping season approached, the permit plan, so successfully tried in 1918 to control the movement of grain to primary markets, was reinstated and maintained so long as necessary to prevent congestion. The permit system has so proven its value as to justify its retention as a permanent institution.

Accumulations

The term "accumulation" includes the cars, both loaded and empty which are in transit in excess of the number that can be handled currently. It represents the number of delayed cars which the railroads are behind, in the aggregate, in their daily performance. It also includes cars held account embargoes on connecting lines and those held for reconsignment. The number reported does not reflect directly any disability of the consignees. On January 1, 1919, there was reported by all lines a total accumulation of 46,950 cars. As a result of the shopmen's strike in August, however, the figure increased to 67,178 on August 15, and the rather general epidemic of strikes and unsettled labor conditions which have since prevailed has tended to keep the total accumulations high. Weekly reports give current advice on the subject, and a follow-up program is vigorously pursued in all cases where the figures appear unreasonable. The latest reports indicate total accumulations as of December 19, 1919, of 72,867 cars.

Company Material

On January 1, 1919, the total number of cars of company material awaiting unloading on all roads was 67,940, of which 50,034 represented coal and coke. At this time, as already explained, there was a surplus of cars and hence no need to expedite unloading. This material is reported weekly, reports being very carefully checked, and the matter handled with those lines showing unreasonable delay to cars or unnecessary stocks of fuel on hand. An instance in point which is of considerable present interest is with respect to the railroad fuel holdings in cars. The aggregate of this is of little importance to the shipping public while a car surplus exists—the contrary is emphatically true as soon as a car shortage develops. Appreciating this, a campaign to cut railroad fuel holdings in cars to the irreducible minimum was begun as soon as the coal-car supply showed signs of tightening. This was carried through with great vigor, the personal effort of the director general giving it further impetus, and in September the total company material holdings reached the low figure of 41,028 cars, of which only 26,216 were coal and coke. The results contributed much to the increased bituminous coal production in September and October.

Quite naturally, as a result of the coal strike and the extraordinary necessity for protecting railroad fuel during its pendency, company material increased in October and since. December 19, 1919, the coal and coke on hand was 40,489 cars; other commodities, 14,227 cars.

Car Conservation

The loading of freight cars has not been as good during 1919 as during 1918. The withdrawal of the Food Administration's rules and regulations December 11, 1918, contributed considerably to the decline in average car loading, as the trade units established therein on food and feed commodities were much larger than the ordinary peace-time trade units. Being no longer in a position to appeal to the patriotism of the shippers for "heavy loading" as a war measure, it was necessary to rely upon other appeals just as reasonable but less persuasive. Unfortunately many shippers overlook the fact that they are vitally interested in heavy loading and that by reducing the number of cars required to move a given tonnage they not only make cars available for other business which could not otherwise be promptly transported, but virtually increase the capacity of all transportation facilities and instrumentalities, including locomotives, industrial and team tracks, yards, platforms, etc. A large number of shippers have resumed the practice of loading equipment only to meet the requirements of the tariff minimum. As a result, the net ton-miles per loaded freight car fell off from an average of 29.2 tons in the first 11 months of 1918 to 27.8 tons in the same period of 1919, or a decrease of 4.8 per cent.

There are, however, some shippers who have been continuously favorable to maintaining the heavier loading practices which prevailed during 1918. On October 29, 1919, the director of traffic, upon solicitation of the car-service section, issued to the railroads freight-rate authority No. 16368, increasing the tariff minimum weights on grain and grain products to the trade units as formerly effective under Food Administration rules and regulations. This is bringing about much needed improvement and increasing car efficiency.

A campaign of education was carried on with consignees during the early part of 1919, in an endeavor to get orders for maximum carloads whenever possible, and where not possible, to induce several dealers in one vicinity to combine orders so that a maximum carload order could be placed. This campaign has been somewhat successful, especially since car shortage has again existed as a compelling influence. In a number of cases shippers have refused to allow minimum orders to go forward until such time as other minimum orders could be secured, so that equipment could be double loaded, thereby making one car do the work of two, thus releasing one of them for another shipper's use.

Throughout 1919 the subject of car conservation has been handled just as vigorously as during the war period, and will continue. Some of the results of these efforts have been as follows:

The co-operation extended by the Tobacco Association of the United States when they adopted a resolution July 1, 1919, approving of, as far and as soon as possible, a standard tobacco hogshead 46 by 48 in. in lieu of the hogshead previously used, which only permitted floor space loading. The so-called standard hogshead permits double-decking, resulting in an increase of 33⅓ per cent in the average loading, or an estimated saving of 20,000 cars per annum.

The paper loading from the largest shipping territory in the United States during the year just passed has averaged about 55,000 pounds per car, whereas previous to our campaign the average loading was about 44,000 pounds.

At the suggestion of the Car Service Section and after numerous conferences and demonstrations with the automobile manufacturers and the loading rules committee, section 3, mechanical, American Railroad Association, standard rules have been promulgated, effective January 1, 1920, showing how to secure maximum utilization of equipment by properly loading automobiles, trucks and trailers. This will have a

tendency to increase the loading, especially as heretofore there were no uniform methods of loading.

The Car Service Section has successfully demonstrated the practicability of loading watermelons five tiers high instead of four and less, and the National Melon Association at its annual convention held in Cincinnati in February, 1919, passed a resolution fixing the five-tier loading as a general practice. This means a saving of about 3,800 cars per annum.

During August, September and October, 1919, a very active campaign was carried on with the salt shippers throughout the United States with gratifying results, the average load in August of 57,260 pounds being increased to 63,180 pounds in October, an increase of 5,920 pounds per car.

In many cases where complaints of car shortage have been made, shippers' loading has been checked, and where light loading has been discovered this has been pointed out to them as contributing substantially to the car shortage.

Encouragement has been given to the adoption and use of mechanical devices as a means of securing heavier loading, especially in double and triple decking of heavy commodities at a reduced labor cost.

A very active campaign has been conducted for the proper loading of coal, both anthracite and bituminous, to the end that loads be so trimmed as to secure the maximum tonnage per car. The shippers and the railroads are both so vitally interested in the avoidance of the enormous transportation waste resulting from the light loading of cars that the co-operation of the shipping public is being and will be continuously sought in an effort to progressively decrease this evil.

Advanced Movements

In 1918 it was possible to make much progress with respect to advanced shipments of certain raw materials and getting them moved to stock piles through the season when transportation conditions are generally somewhat dull. As an example, pulp wood was moved from Canada to points in the states in a large volume during the early spring and summer; phosphate rock was moved from the mines in Florida and Tennessee during the summer, which helped to remove the forced transportation of such materials from the rails when the heavy fall movements of agricultural products began. No such plan was possible this year, due to the general slump in industrial activities and the element of doubt which appeared to exist in all lines of manufacture during the depression of the spring and early summer. The consequence was that the railroads in the late summer and early fall were not only faced with an abnormal business, but there were these movements, which had not previously been gotten out of the way, all to be crowded in at a time of the greatest activity.

Sailing-Day Plan

The "sailing-day" plan, or, as it should more properly be called, the "shipping-day" plan, which proved so efficacious in 1918 in relieving the congested conditions at various transfer points, met with some opposition in the early part of 1919, due to some errors of administration, which were not unnatural in the development of any transportation project of such magnitude. Complaints were received from various state commissions and trade organizations in such volume that a conference was held in April that a better understanding might be had. The main difficulties seem to have been that shippers felt they were denied the right to take freight to the freight houses for forwarding at any time of their choice. This was not the intent. Furthermore, because of the incomplete development of plans, the result of some of the schedules made had the effect of limiting free distribution of traffic from some centers while competitors at other centers were not so limited. This naturally resulted in friction which it was recognized must be overcome. However, new principles were drafted and agreed to which, with intensive following out on the part of all roads, will almost if not entirely eliminate the difficulty now experienced in congested transfers and will give the movement of less-than-carload freight a service far superior to anything which is possible under the old plan, both with respect to time and the avoidance of damage. This will take time, very much effort, and extreme patience, but the plan is sound and should be given enthusiastic support by all railroads.

Transportation Difficulties

While transportation difficulties ordinarily belong in a report of railroad operation rather than of car service, the effect on car supply in some instances is so important that it seems proper to briefly mention the subject here.

There has developed during the fall such an abnormal demand for transportation that certain roads have found extreme difficulty in moving "through" traffic offered to them, with the result that much difficulty has been experienced in giving proper service locally. This condition developed in the West at a time when most unusual weather conditions for that section and season prevailed. With heavy snows and extreme cold, difficulty was found in moving business currently, which had the effect of curtailing the car supply and materially affected the service given to local patrons generally. A further complication was the effect of the coal strike, which forced upon the railroads in that section a fuel different in quality from the normal supply and hence one with which some experiment was necessary before it could be used with any degree of success. Then, again, coal was being hauled out of its usual channels, which, with the consequent movement of the empty cars, upset the usual transportation conditions and had the effect of adding to congestions and other difficulties. By the close of the year, however, these conditions had been very largely overcome and the return to normal was apparent generally.

A competent corps of inspectors has been maintained in varying number, dependent upon the requirements throughout the year. It is the function of these men to keep in intimate touch with car supply and transportation conditions which are giving trouble, and take all practical measures to afford relief. The central administration is thus brought in direct contact with such conditions. This has been particularly helpful in the difficulties arising in the oil-boom territories of Texas and Oklahoma, where the sudden production of oil and the tremendous inrush of people and freight are of such great volume as to be beyond the ability of the railroads to immediately handle. Inspectors have been used extensively in the grain territory, in arranging better use of cars in the large terminals, and in assisting to specialize on distribution, also to circulate among the farmers and ascertain as to the actual conditions with respect to unshipped grain. Much work has been done by inspectors in specializing on coal production, not only in hurrying cars to the mines, but in assisting to get the coal cars back from the non-coal-producing roads to coal-loading roads. As outside agents, these men are of great value in helping to carry on the work of the Car Service Section.

Relocation of Cars by Ownership

Special attempts were made in the early part of this year and during the period of car surplus to relocate cars more in accordance with ownership, this with the idea of getting the cars to the home road so that extensive repairs and betterments might better be applied. At the beginning of federal control 44 per cent of the cars were on home lines. January 1, 1919, this figure stood at 26.6 per cent. An improvement was made so that by the 1st of July 31.7 per cent of the cars were on home lines. From that time on, however, due to steadily increasing demand for equipment with corresponding increase

in shortages, it has been necessary, in order to meet these demands more promptly, to place cars for loading largely without regard to ownership, and the number of cars on home lines has again declined to about the same point as January 1, 1919. The principal reason for this in the latter part of the year was the necessity, because of the coal strike, first, to use coal cars of any ownership to meet the demands for the highest possible production during the two or three weeks prior to the strike, and, second, to move the coal which was produced during the strike far beyond normal channels in order to meet emergencies. In consequence a serious dislocation of cars resulted. Any plan to quickly locate cars on the home road is expensive of operation and cannot be carried out at a time of car shortage without materially interfering with ability to meet the current demands of shippers for cars.

Grain and Grain-Car Supply

The principal grain producing region of the country is west of Chicago, and for convenience it may be divided into the southwestern section, comprising the states of Texas and Oklahoma, the central western section, comprising the states of Nebraska, Iowa, Illinois, Colorado, Kansas and Missouri, and the northwestern section, including Montana, North Dakota, South Dakota and Minnesota. It is in these three sections that the volume of the grain traffic affects the car supply to such an extent that a special effort is generally made in advance of the harvest to protect its movement. In the early part of the year, due to the general falling off in business and the consequent surplus of idle equipment in the East, large numbers of box cars were moved empty to the West in anticipation of an abnormal wheat crop.

In the early summer of 1919 the Interstate Commerce Commission in a formal decision on the subject of distribution of cars for grain loading indicated that it seemed to be advisable that uniform rules to govern car supply for this loading should be adopted by the railroads and enforced throughout the country. To meet this suggestion a conference was arranged by the Car Service Section with transportation representatives from most of the important grain-producing roads of the country, and on September 16, 1919, uniform rules for the distribution of cars available for grain loading at stations throughout the United States were promulgated. These rules have doubtless been helpful in making the distribution on a more equitable and uniform basis than heretofore.

Prior to July 1, 1919, preliminary arrangements had been made for control of the grain movement to the various ports and primary markets through committees, who authorized the loading of grain through individual permits on traffic destined to ports and on that moving between primary markets, as well as on all grain reconsigned, and blanket permits issued to the carriers serving primary markets and covering the movement of grain from country stations to primary markets.

The personnel of the various committees included in each case an official representing the Wheat Corporation of the United States government, railroad transportation department and railroad traffic department, the understanding being that the Wheat Corporation's representative should at all times have the controlling voice with respect to permits to be issued.

At the request of the manager of inland traffic for the Wheat Corporation, this prearranged plan was put into operation on August 1, 1919, at all points except at Gulf ports where the plan became effective on August 18, 1919.

Regardless of these precautions, however, accumulations occurred at Galveston, Baltimore, Newport News and Kansas City, it being more acute and more prolonged at Galveston than at the other points. Some difficulty was experienced in regulating the flow of grain under the blanket-permit method from country stations, and during the latter part of October this method was supplanted in a part of the western territory by the individual-permit plan until the elevator situation became easy enough to permit the grain to come in without restriction.

The wheat movement usually begins in the southwest about July 1, but was 10 days to two weeks later than usual this year, due to weather conditions. About two months before the wheat was due to move, instructions were issued to the western lines to overhaul and put in shape for grain traffic as many of the stored box cars as was practicable prior to the beginning of the grain movement.

Several factors have had an important bearing in delaying the movement of grain this season; especially is this true with regard to the wheat. Principal among these factors are:

1. The Wheat Corporation's difficulty in securing boats for export movement, Great Britain, France and Italy all insisting upon taking their grain in their own bottoms in order to reduce transportation charges.

2. Difficulties consignees of export wheat had in financing the matter of payment therefor.

3. Accumulation of grain in elevators at ports and primary markets, due to the above causes, finally resulting in closing the North Atlantic ports against the acceptance of cargo tonnage of wheat, forcing the available boat tonnage to Galveston to relieve that port and at the same time provide an outlet for a considerable amount of wheat from Oklahoma and Texas, some of which was stored on the ground.

4. A strike of the mechanical crafts during the month of August materially affected the "conditioning" of equipment for grain traffic and brought about congestions, the effects of which on some roads extended into the month of September.

5. In November the coal miners' strike necessitated the preferential handling of coal and increased length of haul; the use of coal from storage and the variations in kinds and grades produced a large number of engine failures and consequent delays to traffic.

6. In December the western roads were greatly hampered by reason of an unusually early and severe storm of snow, which, together with extremely cold weather, brought about congestions, and necessitated the issuance of numerous embargoes.

7. Substantial increase in volume of less than carload traffic, necessitating the greater use of box cars to keep freight houses open.

Vigorous complaints began to come in about the first of September indicating isolated instances of grain being placed on the ground account elevators being full and inadequate car supply.

Recommendations

The experience of the Car Service Section during the past two years has made it quite clear that there should be continued some uniformity of method of car control and distribution as between portions of the country, railroads, stations and shippers. The result of the two years' work has produced, among other things, uniform rules to govern the distribution of coal cars and grain cars, and this establishes practical uniformity with respect to the car supply for the two most important commodities handled by the railroads. There is, however, room for improvement along these lines with respect to others of the important tonnage-producing articles.

The Car Service Section is in direct charge of W. C. Kendall, manager, assisted by W. L. Barnes, A. G. Gutheim H. J. German, W. J. McGarry, C. B. Phelps, G. F. Richardson, assistant managers, and N. D. Ballantine, special assistant.

Effect of Molybdenum in Chrome and Nickel Steels

Increased Toughness and Wide Hardening Range Characterize Steels Containing This Element

IN THE DEVELOPMENT of modern railroad equipment the excessive sizes of parts required to bear the high stresses is often a limiting factor. The use of alloy steels has been recognized as a possible method of overcoming these limitations, but the results secured with this material have not been wholly satisfactory.

The requirements of a steel for use in the running gear of a locomotive are (1) toughness and ability to resist sudden and repeated shocks, (2) ease of manipulation, to permit of handling it without installing special equipment. In addition, it is desirable that the steel have a high elastic limit and ultimate strength. The low carbon steels used in ordinary forgings meet the first requirements, but are deficient in strength. The majority of alloy steels have desirable physical properties, but require special care in working and cannot readily be handled in railroad shops. In view of these facts it is interesting to note that steels alloyed with molybdenum, which seem to combine in an unusual degree the properties that have been found desirable for steels used in locomotives, are now being introduced for railroad service.

The properties of molybdenum steels are set forth in a book recently issued by the Climax Molybdenum Company, New York, from which the information in this article has been secured. The data presented are stated to be the results of tests of the ordinary commercial steels taken from the records of the users of these alloys.

The use of molybdenum as an alloy agent in steel was developed commercially under the stress of war conditions. The properties which made molybdenum alloys especially valuable for use in liberty motors, tanks and other equipment subjected to severe stresses are the high tensile strength and high elastic limit, combined with unusually large reduction of area secured by its use. Other incidental advantages are well illustrated by the following results secured with a chrome molybdenum steel.

TENSILE TEST, PHYSICAL PROPERTIES, GRADE MO-2 CHROME-MOLYBDENUM STEEL

Water quench	Elastic limit	Tensile strength	Elongation, per cent	Reduction of area, per cent
1,500 deg. F.....	149,600	162,900	16.0	57.2
1,550 deg. F.....	151,000	163,400	16.5	57.3
1,600 deg. F.....	148,800	163,600	17.0	57.3
1,650 deg. F.....	148,500	161,400	16.5	58.9
1,700 deg. F.....	149,500	162,400	16.5	56.8

Tests made on 1¼-in. round bars, all drawn at 1,000 deg. F. Analysis: Carbon, .23 to .30, manganese .50 to 80, chromium .80 to 1.10, silicon .10 to .20, molybdenum .25 to .40.

This is further illustrated by the photomicrographs in Fig. 1. The uniformity of hardening throughout large sections is shown by Fig. 2, in which the Brinell readings on 3½-in. square sections of chrome-molybdenum and another similar alloy steel are compared.

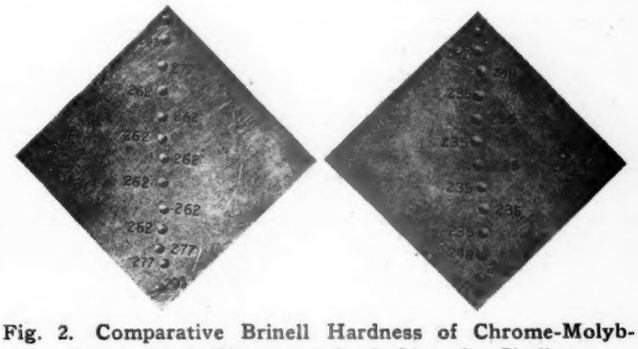


Fig. 2. Comparative Brinell Hardness of Chrome-Molybdenum Steel (Shown on the Left) and a Similar Alloy Steel

Drawn at 700 Deg. F. Drawn at 1,100 Deg. F. Drawn at 1,300 Deg. F.

Specimens quenched in oil from 1,600 deg. F. and drawn as shown. Magnification 400 diameters.

Fig. 1. **Microphotographs of Chrome Molybdenum Steel, Showing Similarity of Microstructure at Various Drawing Temperatures.**

the wide range of temperature within which the tempering and drawing operations can be performed without greatly altering the physical properties of the steel, the uniformity of hardening throughout large sections, the reduction of warpage during manufacture and the unusual toughening of the steel.

The relatively small variation in the physical properties which results from a change in the quenching temperature is

Molybdenum has been used for many years in the manufacture of high speed steel with six per cent of molybdenum and came into disuse with the tool steel trade because the composition was unfavorable to uniform results after redressing the tool, due to volatization. At the present molybdenum tool steels are being produced with cobalt as a stabilizer. All of the steels described in this article contain molybdenum in

amounts ranging from 3.0 to .8 per cent. In these steels there is no volatization in production or in use. However, the properties imparted by fractional percentages of the element were relatively little understood until recently. The alloys of molybdenum formerly used were often impure, and the results secured were therefore not uniform. Furthermore, molybdenum was classed as a rare element, not available in commercial quantities.

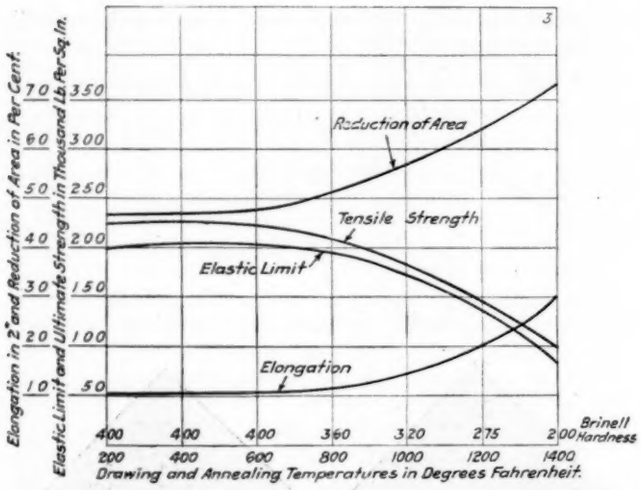

3
Reduction of Area
Tensile Strength
Elastic Limit
Elongation
Elongation in 2" and Reduction of Area in Per Cent.
Elastic Limit and Ultimate Strength in Thousand Lb. Per Sq. In.
Brinell Hardness
Drawing and Annealing Temperatures in Degrees Fahrenheit.

Fig. 3. Properties of Chrome-Molybdenum Steel Quenched in Water and Drawn at Various Temperatures

All tests made with 1¼-in. square bars quenched from 1,600 deg. F. Hardening range 1,500 to 1,700 deg. F. Bars heat treated in full size, then machined to .505 in. diameter. Approximate average analysis: carbon .32 per cent, manganese .55 per cent, silicon .15 per cent, chromium .90 per cent, molybdenum .37 per cent.

During the war large deposits of molybdenum were developed at Climax, Colo. From this ore ferro-molybdenum and calcium molybdate were produced in quantities and a large tonnage of various types of molybdenum steel was manufactured. The molybdenum is introduced into the steel either in the bath or in the ladle, preferably in the bath, and can be used in steels produced by the open hearth, electric or crucible process.

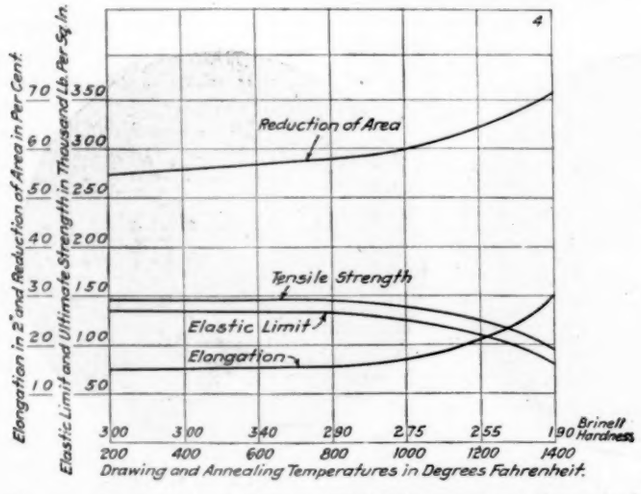

4
Reduction of Area
Tensile Strength
Elastic Limit
Elongation
Elongation in 2" and Reduction of Area in Per Cent.
Elastic Limit and Ultimate Strength in Thousand Lb. Per Sq. In.
Brinell Hardness
Drawing and Annealing Temperatures in Degrees Fahrenheit.

Fig. 4. Properties of Chrome-Molybdenum Steel Quenched in Oil and Drawn at Various Temperatures

Method of testing and average analysis same as given in Fig. 3, except quenching temperature, which was 1,700 deg. F.

The alloys which have been developed thus far are of four general types, chrome-molybdenum, chrome-nickel-molybdenum, nickel-molybdenum and chrome-vanadium-molybdenum steels. Each of these alloys is made in a number of grades with varying percentages of the metallic elements and varying molybdenum content. The chemical compositions are as follows:

CHROME-MOLYBDENUM STEELS

Type MO

	Per cent
Carbon	.15 to .40
Manganese	.40 to .80
Chromium	.70 to 1.10
Molybdenum	.25 to .40

Type MS

Carbon	.40 to .50
Manganese	.60 to .90
Silicon	.10 to .20
Chromium	.80 to 1.10
Molybedenum	.25 to .40

CHROME-NICKEL-MOLYBDENUM STEEL

Type LM

Carbon	.25 to .35
Manganese	.50 to .80
Silicon	.10 to .25
Chromium	.70 to 1.00
Nickel	2.75 to 3.25
Molybdenum	.30 to .50

NICKEL-MOLYBDENUM STEEL

Type NM

Carbon	.20 to .40
Manganese	.30 to .50
Nickel	3.00 to 5.00
Silicon	.10 to .20
Molybdenum	.30 to .70

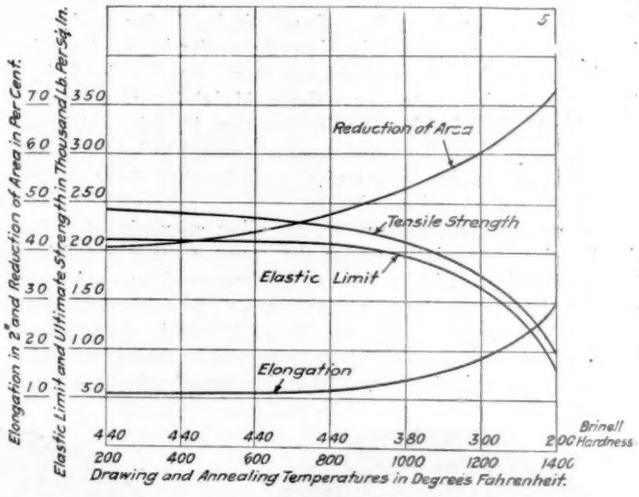

5
Reduction of Area
Tensile Strength
Elastic Limit
Elongation
Elongation in 2" and Reduction of Area in Per Cent.
Elastic Limit and Ultimate Strength in Thousand Lb. Per Sq. In.
Brinell Hardness
Drawing and Annealing Temperatures in Degrees Fahrenheit.

Fig. 5 Effect of Higher Molybdenum Content on Chrome-Molybdenum Steel, Water Quenched

Approximate average analysis: carbon .36 per cent, manganese .52 per cent, silicon .13 per cent, chromium 1.00 per cent, molybdenum .76 per cent. Method of testing same as given in Fig. 3. Hardening range 1,500 to 1,700 deg. F.

CHROME-VANADIUM MOLYBDENUM STEEL

Type VM

Carbon	.30 to .40
Manganese	.40 to .60
Chromium	.70 to 1.00
Vanadium	Trace to .17
Molybdenum	.35 to .85

Properties of Chrome-Molybdenum Steel

The stels of the chrome-molybdenum series are made in four grades of varying carbon content, the analyses being as follows:

TYPE MO

(Molybdenum .25 to .40 per cent)

	Grade MO-1	Grade MO-2	Grade MO-3
Carbon	.15 to .23	.23 to .30	.30 to .40
Manganese	.40 to .70	.50 to .80	.50 to .80
Chromium	.70 to 1.00	.80 to 1.10	.80 to 1.10
Silicon	.10 to .20	.10 to .20	.10 to .20

Sulphur and phosphorus each .04 maximum.

This type is suitable for general machinery parts subjected to high stresses. With low carbon content it makes an extremely tough casehardening steel, while the grades having higher carbon percentage are used principally for oil-quenched

gears and large forgings. The grade MO-3 is recommended for driving axles, main and side rods, piston rods and crank pins. The properties developed by water and oil quenching are shown by the diagrams reproduced in Figs. 3 and 4. The reduction of area, which is an index of the toughness and

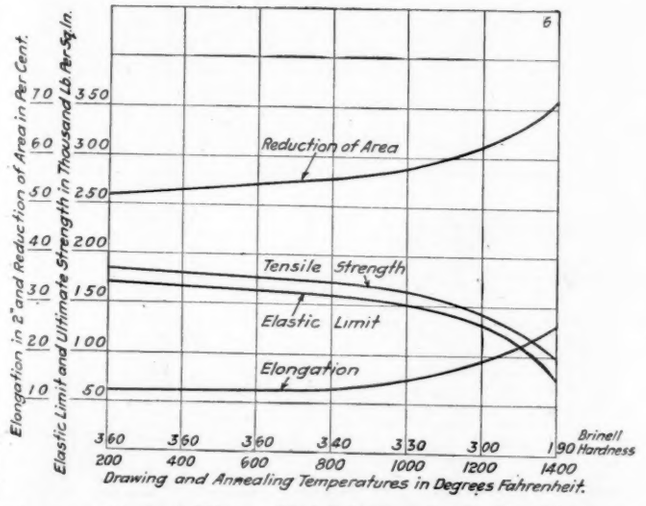

6
Elongation in 2" and Reduction of Area in Per Cent.
Elastic Limit and Ultimate Strength in Thousand Lb. Per Sq. In.
Reduction of Area
Tensile Strength
Elastic Limit
Elongation
Brinell Hardness
Drawing and Annealing Temperatures in Degrees Fahrenheit.

Fig. 6. Effect of Higher Molybdenum Content on Chrome-Molybdenum Steel, Oil Quenched

Approximate average analysis same as given in Fig. 5. Method of testing same as Fig. 4.

satisfactory machining qualities of the steel is unusually high. It will also be noted that the tensile strength and elastic limit decrease slowly as the drawing temperature is increased. This is a distinct advantage, as the high drawing temperature gives greater resistance to dynamic stresses or fatigue and

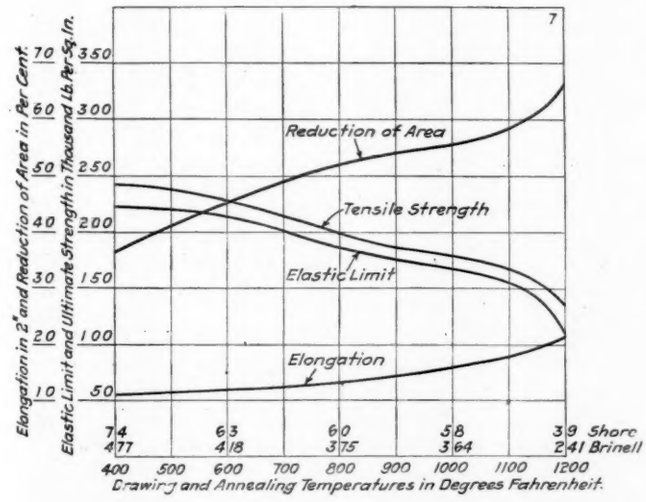


Fig. 7. Properties of Nickel Molybdenum Steel, Drawn at Various Temperatures

All tests made with 1⅛-in. round bars quenched in oil from 1,500 deg. F. Hardening range 1,450 to 1,650 deg. F. Heat treated in full size and then machined to .505 diameter. Approximate average analysis: carbon .33 per cent, manganese .25 per cent, silicon .18 per cent, nickel 4.50 per cent, molybdenum .58 per cent.

the slow falling off of the physical properties gives greater permissible range in heat treatment.

The effect of an increase in the molybdenum content is shown by a comparison of the tests in Figs. 3 and 4 with Figs. 5 and 6, the curves in the latter charts representing tests of steel containing .76 per cent molybdenum, whereas Figs. 3 and 4 were plotted for steel with .37 per cent molybdenum.

Molybdenum Spring Steels

The type MS has a higher carbon content than the type MO and is designed especially for springs, rivet sets and forging dies. The analysis range is as follows:

Carbon	.35 to .60 per cent
Manganese	.60 to .90 per cent
Silicon	.10 to .20 per cent
Chromium	.80 to 1.10 per cent
Molybdenum	.25 to .40 per cent

The physical properties of this steel are:

Elastic limit	180,000 to 210,000 lb. per sq. in.
Tensile strength	200,000 to 230,000 lb. per sq. in.
Elongation, per cent	12 to 15
Reduction of area, per cent	37 to 45

The chrome-nickel-molybdenum and chrome-vanadium-molybdenum steels are not considered commercially applicable for railroad service. However, the nickel-molybdenum steels are applicable for practically the same service as the type MO-3.

Nickel-Molybdenum Steels

The addition of molybdenum to nickel steel increases the elastic limit and the toughness and ductility for given elastic limits. It also permits of heat treating the steels within a wider temperature range without a detrimental effect on the physical properties.

The grade recommended for axles and similar parts is the NM-2, which has the following chemical composition:

Carbon	.30 to .40 per cent
Manganese	.25 to .45 per cent
Nickel	3.00 to 5.00 per cent
Silicon	.10 to .20 per cent
Molybdenum	.30 to .70 per cent

The table below shows the slight variation in the properties caused by marked differences in the quenching temperatures:

TABLE I—PHYSICAL PROPERTIES

Oil quench	Elastic limit	Tensile strength	Elongation, per cent	Reduction of area, per cent
1,450 deg. F.	164,600	173,800	16.0	53.4
1,500 deg. F.	166,500	176,000	15.5	55.3
1,550 deg. F.	165,100	175,000	15.5	54.0
1,600 deg. F.	164,900	173,300	15.5	55.6
1,650 deg. F.	166,000	174,400	15.0	55.0

Analysis: Carbon .33 per cent, manganese .25 per cent, silicon .18 per cent, nickel 4.50 per cent, molybdenum .58 per cent.

The effect of a variation in the drawing temperature is illustrated in Fig. 7.

The data presented in the foregoing charts and tables have been taken from tests of material used in automobiles, aviation engines and tanks, the sections in all cases being relatively small. The difference in the service conditions encountered in railroad equipment and the larger sections used make it difficult to predict the behavior of molybdenum steels in locomotive parts. From the results already secured the types described above appear to have properties that would make them well adapted for use under severe service conditions, and the results of the introduction of this type of alloy steel will therefore be of great interest.

OPERATING METHODS AND FUEL ECONOMY.—If you would get out and get the slow orders off your railroad, and get trains made up so that every train doesn't have to stop and set out something at every cross road; if you would see that your dispatchers know what is going on and make them take the responsibility, which is justly chargeable to them, the engineers and firemen would be relieved of a big load that they have been carrying for years, and your fuel bill and other operating expenses would be reduced more than can ever be accomplished by further education of the engine crew.—*H. C. Woodbridge, before the Central Railway Club.*

The French Railway Strike

LONDON.

THE SUDDEN STRIKE of the railwaymen on the Paris-Lyons-Mediterranean line on Wednesday, February 25, was caused by a dispute over a carpenter named Campanaud, a Syndicalist delegate, who went without leave to the labor congress at Dijon. The Paris-Lyons-Mediterranean authorities have explained that permission for a sufficient number of representatives was given to attend the conference and that they would not have interference from the outside on a question of discipline. On his return from the conference Campanaud was suspended for 48 hours and was warned that another offense would mean instant dismissal.

With regard to the general causes of the strike it may be said that it was a movement of a revolutionary character. A representative of the London Times said that at several meetings a number of speakers declared that this strike was the beginning of a general Soviet movement. It was, therefore, something of a tribute to the general good sense of the railwaymen that the summons to "come out" was not generally responded to. The National Federation of Railwaymen announced that they intended to demand the satisfaction of their claims in their entirety—the establishment and application of new scales of pay and employees' regulations; the acceptance of the principle that women be paid equally with men for equal work; payment for extra time work during the war; the curtailment of the period before a man became a full employee and is thus entitled to special treatment; the fixing of the war bonus at 1,080 francs, and the nationalization of the railways.

Nationalization of the railways is the crux of the whole

Troops on Guard at the Gare de Lyon

matter. Organized labor thinks that to have the state as an employer is the supreme goal to be attained and that the state can be forced to give in to all its demands, however economically unsound and far-reaching these may be, for fear of losing votes.

On the second day of the strike the only other railway which responded to the call to "down tools" was the state system, and it was not until the fourth day of the strike that the Federal Council of the Railwaymen's Union ordered a general strike. However, the attempt to paralyze the transport and industry of the whole of France by a sudden blow appears to have failed. At any rate, the French railwaymen did not show anything of that automatic and clockwork precision in ceasing their labors, which, whatever one may think of the rights and wrongs of the conflict, spoke volumes for the discipline and organization of the British National Union of Railwaymen during its strike last September.

M. Millerand, the Prime Minister of France, presiding at a cabinet council on February 27, said, in addressing the chamber on the situation created by the strike, that arbitration on Campanaud's case had never been asked for, but once work were resumed the government would not refuse it. He further said, "We are not faced with a co-operative movement but with a political movement and frankly, to call it by its right name, a revolutionary movement." At the meeting a communique was issued authorizing partial mobilization of the railwaymen of the Paris-Lyons-Mediterranean system who were in the army reserve. It was also approved by the minister of commerce and supplies that a decree be issued provisionally establishing the restrictions already proclaimed during the war concerning the consumption of milk and the composition of meals in restaurants and public eating places.

An Overcrowded Suburban Train at Paris

It was also decreed that the minister of public works should ask for the discussion of a bill providing for the organization of motor vehicles in case of interruption of railway transport. These decrees, however, were not put into effect.

Unlike the English, the French did not show that spirit of civic service that was so well displayed during England's railway strike last September. There was no spontaneous rush of voluntary workers, no big movement to assist the government. People expected the army to do the work which in England was done by coal heaver and duke alike.

Various arrests were made and a warrant was issued for the arrest of M. Midol, secretary of the Paris-Lyons-Mediterranean branch of the Railwaymen's Federation. Only one case of sabotage was reported, which took place at Audbervilliers, near Paris.

Tuesday, March 2, saw the settlement of the strike. The terms represent a reasonable compromise between public and railway interests, and in them the government displayed a desire to listen to the men's point of view, which is worthy of praise. The terms of the settlement were as follows:

1. Trade union rights are to be defined and respected.
2. The scale of wages fixed by the Railway Federation is to be applied as soon as possible.
3. All points in dispute are to be referred to the already existing arbitration committee.
4. The claims are to be settled by the boards composed of men representatives of the railways.
5. An immediate inquiry into the future regime of the railways is to be held with the cooperation of the General Confederation of Labor, and in particular of its recently created Economic Council.
6. The strikers will not be paid for the time during which they were on strike.
7. Punishments for refusal to work are not to be maintained and other penalties are to be applied in a spirit of justice.
8. The arrests which have been made are to be maintained and left to the decision of the courts.

By far the most important point in this settlement is that in which the principle of the co-operation of labor in the discussion on the future of the railways is established.

The National Agreement with the Shopmen*

Securing Co-operation from the Workmen—Apprenticeship Stabilizing Working Conditions

By Frank McManamy
Manager, Department of Equipment, Division of Liquidation Claims, U. S. Railroad Administration

THE TWO REAL DIFFICULTIES in connection with private operation of railroads immediately prior to the time the railroads were taken over by the government were labor conditions and financial conditions which I have stated I believe in the order of their importance; because the government could at any time relieve the financial conditions, but it could not so readily relieve the labor conditions; and after all railroads or any other industry are operated by men.

It is simply restating an acknowledged fact to say that the labor situation was extremely serious in the latter part of 1917, due to a number of causes. Large numbers of men had been drawn from the railroads for military purposes, making a serious shortage of skilled men in the railroad business. Because of the failure of the railroads themselves during a long period of years to take necessary steps to train mechanics by maintaining a full quota of apprentices, there was no available source of supply and no large number of apprentices which could in an emergency be drawn on to do mechanics' work. There was also a widespread distrust on the part of railroad labor of the motives behind any attempt to increase working hours or in any other way to modify the working agreements which had been obtained by railroad employees after years of negotiation and the expenditure of vast sums of money, as well as by numerous strikes which were disastrous alike to employer and employees. The organizations looked with a suspicion on any request to waive any of the privileges thus gained and feared that the national emergency would be taken advantage of to take away from them some of the privileges which they enjoyed as a result of the efforts of their organizations.

There was no supply of men to draw from to meet this emergency and the situation could only be met by co-operating with labor in a fair and open manner and by obtaining their consent to the temporary waiving of some of the provisions of their agreements. This could never have been accomplished by individual carriers, because there could be no assurance given which would be satisfactory to the employees that once these privileges were given up they would ever be restored. Therefore, it appears to be conclusive that at this period no other agency except the United States Government could have effectually handled the labor situation as it existed at that time.

The first national agreement covering all railroad shopmen is represented by Director General McAdoo's letter of February 14, 1918, to A. O. Wharton, president of the Railway Employees' Department of the American Federation of Labor, in which an understanding with shopmen was reached whereby certain privileges long enjoyed by them and covered by many agreements with railroads were temporarily waived on the assurance of the Railroad Administration that the agreements in full would be restored and observed as soon as the condition of locomotives and cars would justify it; and it is but fair to the representatives of the shopmen to state that when this matter was presented to them an understanding was promptly reached by which they waived privileges obtained through years of negotiation, on the assurance of the Railroad Administration that their agreements would be protected; and that letter constituted the working basis between the Railroad Administration and the shop employees from the day it was issued up to the date of the signing of the National Agreement; and from that moment that letter became effective and the working conditions were regulated in accordance therewith, a constant improvement in the condition of motive power and cars became apparent.

Many changes have been brought about by the war, none of which are more far-reaching or important than the changes in the condition of and the method of dealing with labor, and in my opinion the employer in the future who expects harmony, efficiency and co-operation from his employees must devote at least as much thought to the selection, training and treatment of his employees as he gives to the erection of his shops or factories and the installation of the equipment. In other words, if we are to have a complete, smooth-working, efficient machine, which includes employees as well as machinery, as much time and thought must be given to the study of what might be termed "humanics" in connection with the treatment of employees as we give to the study of mechanics in connection with the erection or operation of the plant.

Suggestions by Workmen

It is a recognized fact that in practically every human activity, increased opportunity for a common understanding has been productive of favorable results; therefore, it is difficult to understand just why the average railroad shop is behind industrial establishments in the matter of having a method for obtaining from their employees co-operation and advice relating to shop methods and conditions.

The director general observed and recognized the advantages to be derived from having sympathetic understanding and co-operation between the employees and the officials, and tried to work out and have put in effect a system which would insure a greater degree of co-operation and give to the management the full benefit of the knowledge and experience of the workmen and their suggestions as to improvements in methods to bring about increased efficiency. Several months ago he suggested to the regional directors the advisability of arranging for employees through their regular organizations to select a committee for the purpose of considering with the local officials, questions affecting matters relating to shop operation and output.

The plan under which this suggestion was to be carried out was by regular meetings between the local officials and the committee selected from the shopmen to discuss with the utmost frankness all questions involving the planning and the carrying on of the work, inviting suggestions from the committee and endeavoring to give full weight to all of these suggestions that might be meritorious. It, of course, must be clearly understood that these meetings were not to be for the purpose of adjusting grievances, either directly or indirectly, and that such matters must not even be discussed. The following illustrations were given of subjects which were considered as probably suitable for such discussions:

1. Co-operation between departments.
2. Proper storage and care of material.
3. Distribution of material.
4. Tool equipment and distribution of hand tools.

*Part of an address before the Western Railway Club, Chicago, March 17, 1920.

5. Grouping of machine tools.
6. Machine operation and crane service.
7. Scheduling work through shops.
8. Better classification of freight car repairs and whether certain work can be more economically done.
9. Improved methods of making repairs.
10. Method of handling and disposition of scrap.
11. Inspection of scrap and reclamation of usable material.
12. Condition of shops and shop grounds.

The above was not given as a complete list of the subjects which might properly be discussed, but simply as a general outline of matters on which a discussion would no doubt prove beneficial. The plan contemplated one representative from each of the crafts, except in the larger shops where the representation could be increased as might be found desirable. The ranking mechanical department official at the shop in question should preside, all others attending the meeting to be on exactly the same basis so far as the discussion of the matters presented was concerned. In order to have a free discussion it would, of course, be necessary to have the representatives of the employees and the junior officials express their opinions first. Otherwise a free discussion would not be possible, because in some instances men might hesitate to express opinions contrary to those of the ranking officials.

Owing to lack of time this plan was never put into complete operation, but was submitted to the federal managers, and many expressions of approval were received. Similar plans are now in operation in many industrial establishments and have proven to be very beneficial.

Advantages of National Agreement

National agreements cannot be made in all lines of industry, but the transportation industry is essentially a national one. The work of conducting it is substantially the same in Maine and California, in Montana and Texas.

Equipment to a large extent has been standardized, partly by the different associations of railroad officials, partly by law, and partly by the Railroad Administration. Standard transportation rules have been adopted by practically every railroad in the country. The interchange of freight cars is complete. Tickets and bills of lading are practically uniform; and with the consolidation of ticket offices throughout the country, which was adopted by the Railroad Administration, the practices in this respect became almost as nearly standard as in United States post offices. Under such conditions it is not only idle but illogical to think of keeping the man-power which operates the railroads separate and working for different rates of pay on different railroads and under different working conditions.

Among the principal benefits to be derived from the national agreement is the stabilization of shop organizations and the elimination of what had become almost an institution in connection with railroad shop labor; that is, the "boomer" mechanic, who was continually moving from place to place in search of conditions more to his liking. Everyone will admit that the ideal shop organization is a force of what has by the boomer been termed "home guards," who select railroad shop work as their permanent occupation and who wish to establish themselves permanently at the point where they are employed, own their homes, take a part in the general affairs of the community, cultivate a circle of friends, educate their children, and in general enjoy the privileges and exercise the duties which are supposed to fall to the lot of the average American citizen. Under such conditions men become familiar with the work required of them, study the details of the particular equipment which they are required to handle and the peculiar conditions which they are required to meet, take an interest in the general operation of the railroad and become a part of the permanent organization which is necessary for the successful operation of any property.

A national agreement insuring equal privileges to men at all points on all lines will help to bring about this desirable condition. On the other hand, if we are to have on one railroad certain favorable conditions of employment which do not exist on other railroads it will necessarily cause men on a large number of railroads to be dissatisfied with their working conditions and to constantly, and we may as well say properly, strive for an improvement of their own conditions to compare with those on the neighboring line. This affects efficiency in many ways. It not only results in a constantly changing force of mechanics, which is hurtful, but it is also fatal to that spirit of loyalty to the employer's interest without which no railroad can be efficiently operated.

A national agreement with railroad shopmen brings stability to the railroad organization, and by virtue of the large number of men covered by it acts as an insurance against local disputes in the same way that life insurance or fire insurance protects the individual by distributing the losses over a large number of those participating in it.

It is entirely possible for the individual at a local point to become so dissatisfied with certain working conditions, which are in no way general and which can be readily remedied by a reasonable application of the agreement, that they will go on strike to remedy conditions which could be much better handled in another way. As a matter of fact, however, such local strikes are not desired by the organizations of the employees any more than they are by the railroads, and while we have, during the period of federal control, had more than 200 of such local strikes, not a single one of them has been sanctioned by the national organizations, and these organizations have always been helpful in restoring normal conditions.

The Apprenticeship Question

One of the conditions which we developed as a result of the national agreement is illustrative of the fact that the arguments which are used by one side or the other to any controversy are often based on the wildest kind of a guess, for the reason that no one has ever developed the facts. I refer to the apprenticeship rules in the national agreement. The employees have for years favored regulating the number of mechanics by regulating the number of apprentices, with the purpose in mind of avoiding an over-supply of mechanics with its resultant effect upon the rates of pay. The employers have opposed this plan of the employees because they believed it was unfairly restricting the number of mechanics which were being trained and was reducing the supply of mechanics to an extent which made successful shop operation difficult.

The ratio which had been agreed to by the employees and the officials on many railroads of five to one was held by the employers to be too low, and it was urged that this ratio would not provide a sufficient supply of mechanics. In negotiating the national agreement we felt justified in accepting the fact that such agreements were satisfactorily meeting conditions on a large percentage of the railroads of the country as evidence that the ratio was reasonable; therefore, the ratio of one apprentice to five mechanics was incorporated in the national agreement.

In order to bring out as nearly as possible just what this would mean, I immediately started in to develop the actual conditions which existed and to see how nearly we were in fact working to the ratio which was set forth as the proper one. A complete check of all the railroads in federal operation showed that we had in service 17,268 apprentices, while under the ratio provided in the national agreement we were entitled to 64,182.

In the Eastern region the ratio of mechanics to apprentices was 21.40; in the Allegheny region, 30.95; in the Pocahontas region, 14.18; in the Southern region, 13.48; in the Central Western region, 12.75; in the Northwestern, 22.44; and

in the Southwestern, 11.89, making an average for the country of 18.58 mechanics for each apprentice.

It will thus be seen that the opposition to this rule was due almost entirely to the absence of complete and accurate information concerning existing conditions. We were informed by many railroads that the reason the number of apprentices was so extremely small was because they were unable to obtain more. If that is true it would certainly seem to be illogical to dispute with the employees over the proper ratio and to blame the shortage of mechanics on the restrictions contained in the working agreements. Our investigations, I think, show without doubt that the ratio of apprentices provided for in the national agreement is reasonable and fair, and that it will provide a sufficient number of skilled mechanics if it is consistently followed.

Based on Former Agreements

There is nothing freakish about the present national agreement with shopmen, and it was not, as some have assumed, adopted without the most careful and thorough discussion and consideration. It is based on the agreements which were in effect on a large percentage of the railroads of the country and which had proved to be practicable and workable. It was discussed for approximately four months by a joint committee representing the different regional directors and a committee representing the various national or international shopmen's organizations. The rules which were agreed to at these conferences and those on which no agreement could be reached were then referred to the Board of Railroad Wages and Working Conditions, where both sides presented arguments, and the matter was in the hands of this board for approximately four months. The wage board failing to agree upon the terms of the national agreement, it was then turned over to the mechanical department of the Division of Operation, where, with the assistance of the Division of Labor, the agreement in its present form was negotiated and submitted to the director general, who approved it on September 20, to become effective October 20, 1919.

It is true this agreement does not cover every difference of opinion which may arise between local officials and local committees or between general officials and general committees, and it was not expected to. It does, however, provide a sound basis upon which to handle such differences if it is accepted by both sides with a sympathetic purpose to carry out the very obvious intent of the different rules.

It is true that we have received in the nieghborhood of 2,500 requests for information concerning the application of the various rules, which has practically all been furnished. Some of the questions presented are of a character which cannot possibly be covered by any national agreement or by any interpretation of an agreement, but are local matters which can only be handled with a complete knowledge of the facts at the particular point.

Rules 35 and 36 are worthy of special mention because they provide means for settling all grievances which may arise. Rule 36 also contains the following provision for avoiding strikes which were never before contained in a working agreement: "Prior to the assertion of grievances as herein provided, and while questions of grievances are pending, there will neither be a shut down by the employer nor a suspension of work by the employee."

It is not to be expected that this provision will entirely prevent either of the evils it is aimed at any more than the command, "Thou shalt not steal," has made all men honest, but it points the way to a better method of handling disputes and provides a working basis on which to adjust them.

The special rules of each craft which set forth the qualifications of mechanics will provide a better organization than the plan of training specialists who can do but one thing, which perhaps through necessity was followed in many shops, as it is generally admitted that the supply of all-around mechanics was invariably less than the demand.

The agreement properly applied will stabilize working conditions, remove causes for disputes and provide means for settling them, enable you to build up permanent forces, and provide through the apprenticeship system for an adequate supply of mechanics to successfully and efficiently operate railroad shops, and this is all it was intended to do.

Discussion

The discussion of Mr. McManamy's address was something of a disappointment, considering the large attendance at the meeting. Summed up, there seemed to be a feeling that the men were working at a low rate of efficiency and that there was not the incentive that there should be to encourage them to put forth their best efforts. An instance was cited where the man-hours per engine for general repairs had increased from an average of about 6,200 in 1917 to about 8,000 in 1919.

Several speakers commented on the difficulties caused by the classification of men of little or no training or ability as full mechanics. Something must be done to develop able all-around mechanics.

Stabilizing the working conditions should do much to prevent the shifting of men from one road to another, although this has thus far not been entirely eliminated.

The routing or schedule system has helped to offset the loss in efficiency caused by the cutting out of piecework.

The roads generally are not doing what they should in connection with the training of apprentices.

Seams in the Base of Rails

A REPORT has just been issued by the Bureau of Safety of the Interstate Commerce Commission, which contains an extended discussion of "half-moon" fractures in the base of rail. This investigation was undertaken as a result of a derailment of a Chicago & North Western passenger train at Lebanon, Wis., on February 25, 1918, which was caused by a base failure and which was brought to the attention of the commission as a result of a large number of failures of this type on this road. James E. Howard, engineer physicist of the commission, has since made a detailed study of this type of failure, and has embodied his findings in this report, of which the following is an abstract.

Seaminess of the metal in the base of the rail has been responsible for all or nearly all half-moon fractures. Rails are affected by seaminess of the metal, both exterior and interior. Interior seams or streaks are contributory chiefly to fractures of the head of the rail; exterior seaminess to those of the base.

Interior streaks are believed to have their origin in the ingot. Upon this point most opinions are in accord. Divergent views are held in respect to the origin of exterior seaminess, some of which attach responsibility to the surface condition of the ingot; others attribute the cause to some stage in the process of manufacture.

Cracks are not infrequently of greater length than an inspection of the surface indicates. They may extend a number of inches without appreciable width of opening between their sides. Furthermore, incipient cracks on the underside of the base, due to position, remain unknown until they have reached an advanced stage, until a half-moon fragment is about to be detached or complete rupture of the rail has taken place.

A longitudinal crack usually begins at a surface seam. There are few, if any, exceptions to this rule. The seams in some rails may be obscure but nevertheless present. The central crack is diverted from its course, curves and extends

to the edge of the flange. The line of rupture travels from the central seam toward the edge of the flange, never in reverse direction. The distance the line of rupture may follow a base seam ranges from less than 1 in. to 2 ft. or more. Half-moon fragments may be detached from either flange of the base, from the gage side or from the outside of the rail.

Under normal conditions the incipient portion of a base fracture will form over a tie. Rails are unsymmetrically strained. The coning of the wheels throws the weight on the gage side of the head, which is transmitted to the inner flange of the base. On the other hand, flange thrusts from the wheels stress the outer flange of the rail. Each flange of the base curls up slightly when the rail is deflected. This local movement in the flanges is probably responsible for rails deflecting a little more under bending stresses than their section moduli call for.

It is not necessary that rails should rest unevenly on the ties in order to induce base fractures. The contention that a crescent-shaped break is prima facie evidence of uneven bearing on the tie is not well supported by observation. The bases of rails are exposed to repeated stresses in crosswise direction as well as longitudinally, tending to result in progressive fractures under stresses below the primitive strength of the flanges.

The presence of a seam of any degree on the surface of the base is a source of weakness, and follows the usual law of being more serious in hard steels than in the softer grades of metal. It is disquieting to note how slight a surface defect may culminate in a half-moon break in current grades of rail steel. The doubt is raised whether they are all of a remediable order. Prolonging the life of the rail by increased depth of metal in the base, a reinforcing measure, suggests itself from an engineering point of view. Metallurgical or fabricating requirements may be compensated for in some cases, but failures of recent occurrence show this would not be a satisfactory method of obscuring such defects. The elimination of surface seaminess should be accomplished, so far as it is practicable.

Base fractures of recent occurrence are numerous. In connection with the present investigation 748 rails were inspected which failed in this manner. Among this number was a group of 224, companion rails of the one which caused the present derailment. Surface seaminess on the base was a factor common to all which were critically examined. These failed rails represented the product of six mills, and had been in service on different divisions of seven railroads. Their weights ranged from 75 lb. per yard to 107 lb. The periods of time in the track were from 4 months to 13 years. The progressive character of the fractures was equally apparent on those which failed in four months' time as on those of the longest duration in the track.

According to the extent of the seaminess and also influenced by traffic conditions, half-moon breaks occur early or are deferred for a term of years. This also is the general history of progressive, fatigue, or repeated stress fractures, by whichever name they may be designated. Lowering the fiber stress invariably tends to prolong the life of steel, regardless of its manner of failure. Increase of section, previously referred to, although not a corrective measure metallurgically, has the advantage of being positive in its character. Still, without resorting to this expedient the variable extent of seaminess witnessed in different rails encourages the belief that substantial improvements in fabrication are attainable.

The cause or causes which lead to surface seaminess is a somewhat mooted affair. This defect has been variously ascribed to the original surface condition of the ingot, to the effects of breaking down passes of the blooming mill, to ragging of the rolls, and to an intermediate pass of the rail mill. Testimony has been to the effect that a modification in shape at one of the intermediate passes was attended with a favorable result. Laps in the base of the rail were traced to this particular pass and corrected by diminution of the depth of the concavity in the rolled shape, which in the finished rail had to be filled out to a flat surface.

The sides of seams are frequently blue-black in color, showing their formation occurred during brief exposure to the air when the steel was at an oxidizing temperature. Some seams present only slightly oxidized walls, but are lined with the micro-constituent ferrite, suggesting the explanation that the walls of the seam were a part of the periphery of the shape at an earlier stage. Pickling in hot acid has brought into view lines of ferrite which by further pickling were converted into open seams. This is not held to indicate necessarily a difference in the rate of solubility of the micro-constituents, but attributable to exposure of more area of surface at the seam upon which the acid acted.

The problem of the roll designer is directed to the production of definite finished shapes, the successive reductions from the ingot or bloom being arranged with the ultimate object of getting the metal into the exact cross section prescribed. In attaining this end the peripheral speed of different parts of the rolls vary from top to bottom of the grooves, affecting all shapes except flats, while the rate of travel of the rail as it emerges from a given pass is the same for all parts of its periphery. From this circumstance there is, necessarily, a difference in the action of the rolls on different parts of the rail, without mentioning variations in temperature in different portions of its cross section. Taking these matters into consideration, it would appear advantageous to inquire into the influence of the latter passes of the rail mill in quest of contributory causes to the formation of surface seaminess.

The formation of mill scale, magnetic oxide of tangible thickness, obscures seamy lines, which are revealed by the acid of the pickling bath. The rolled surface of the base furnishes evidence of seaminess in less degree than revealed by pickling. The usual inspection of rails for acceptance does not adequately guard against nor provide for the detection of this common defect. In consequence of this omission rails are inspected, meet the requirements of the specifications, are placed in the track, and promptly fail from seaminess of surface.

The pickling of steel is not a new nor untried requirement in the inspection and acceptance of materials for engineering purposes. In one of the most noted examples of modern engineering construction the pickling of the steel plates was a requirement. The pickling of a crop end of a rail, involving a minimum amount of labor, would reveal the condition of the surface obscured by the mill scale and show whether normal or unusual seaminess was present.

Improvements admit of being made, it is believed, which will prolong the life of the rail and in so doing provide an increased margin of safety which may be retained for a time. Whatever may be accomplished the fact will remain that the controlling feature in rails is found in the manner in which they are loaded. Motive power and equipment are carried on wheels the impinging pressures of which upon the head of the rail are the ultimate limiting factors.

Choice of chemical composition in the adoption of the grade of steel employed is optional, and improvements may be made in producing a rail structurally superior to other rails, but the super rail will nevertheless have its limitations in strength and durability measured by the intensity of the wheel pressures which it will sustain.

The fixing of wheel pressures is under control. They may be heavy or light, according to the will of the designer of the rolling stock, the establishing of which loads as such requires no special skill in the mechanical arts. The production of structurally sound steel and its conversion into commercial shapes presents a problem of quite another order, incomparably different from the former. Notwithstanding the great disparagement in size between a locomotive and

the rail which supports it, and the seeming inadequacy of the foundation on which the rail rests, very few rails fail by direct bending stresses. Failures, directly or indirectly, are chiefly connected with intensity of wheel presures. Limitation of wheel pressures and elimination of seaminess in the steel, interior and exterior, are chief factors in the steel rail problem.

The report concluded with a brief summary by W. P. Borland, chief of the Bureau of Safety, in which he stated that this type of fracture of the rail is a common one, and therefore possesses interest from both the point of view of safety and from its economic importance. The reported number of rail failures due to half-moon base breaks is large. As pointed out in the report of the engineer-physicist ambiguity attaches to many rail failures which are reported as square breaks. There is reason for believing that an explicit description and report upon those rails which are now classified as square breaks would reveal a larger number of crescent-shaped base breaks than are being reported as such.

All or nearly all base fractures have been found to exhibit an initial seam at the undersurface, along the middle of the base. It is clearly evident that the elimination of this initial seam should result in an improvement and prolong the life of the rail. Efforts should therefore be directed and maintained to accomplish this result.

In order to ascertain the cause of surface seaminess and the stage or stages in the process of manufacture at which seaminess makes its appearance, the pickling of the shapes affords a favorable method of inquiry. It has been found a serviceable method in other branches of engineering, and is no doubt applicable in the case of rails, using crop ends of same. There should be definite assurance that rails with seamy bases which promptly fail when they are put into service should not reach the track before the discovery of their condition is made.

Subordinate Officers Ask Recognition

WASHINGTON, D. C.

A HEARING before Commissioners Clark, Daniels and McChord of the Interstate Commerce Commission on March 15 and 16 on the question of what railroad men should be classified as "subordinate officials" as provided in the new transportation act, and as to whether the regulations promulgated by the commission on March 8 for the making of nominations for appointment to the Railroad Labor Board shall be modified or supplemented, brought out a lively jurisdictional contest as to what organizations are entitled to represent such men and also a vigorous fight on behalf of some of the smaller independent labor organizations that had been disregarded in the commission's regulations for the right to make nominations.

Organizations representing claim agents, civil engineers, traveling auditors, supervisors of mechanics, yardmasters, train despatchers, storekeepers and supervisory station agents demanded recognition for their members and others of the same class as "subordinate officials," while officers of the so-called "standard" organizations of employees insisted on the right to represent most of them as employees, and a committee representing the Association of Railway Executives headed by C. R. Gray, president of the Union Pacific, asked the commission to confine its classification of subordinate officials to those whose oversight over others is limited to supervision over a particular task, whose working conditions are similar to those of the men under them and who having nothing to do with the authorization of wages, discipline or the payment of money and who do not have confidential relations with the management. Mr. Gray said that the term subordinate officials had been loosely applied in the past and might include any official below the chief executives, that it would be highly prejudicial to discipline and efficiency to include those having confidential relations or authority over wages and discipline and because of the varying titles used on different roads for men having similar duties the commission should adopt some general definition such as the "yardstick" proposed by the committee because it would be wholly impracticable to classify according to title. Commissioner Clark said, however, that if the subordinate officials are to be designated in time to allow them to make nominations for the labor board it will probably be necessary for the commission to adopt some arbitrary rule. In reply to this Mr. Gray suggested that nominations might be made by the officers representing those held to be subordinate officials without exactly classifying them by organizations.

It was said that the Railroad Administration had not officially designated any class as subordinate officials, but had merely drawn the line between officials and employees for the purpose of determining whether or not questions as to their compensation should be passed upon by the wage board or by the operating officials. However, letters from Director General Hines and W. T. Tyler, director of the Division of Operation of the Railroad Administration, were read, in which despatchers and others were referred to as having a distinct status as "subordinate officials" and as being deprived of some of the advantages of both the official class and of the employees.

The various representatives of the organizations claiming to be subordinate officials presented their arguments in turn, the representatives of the labor organizations gave reasons why they claimed to represent them as employees, the usual reason given being that they had legislated for them in the past and had large numbers of them in their membership, and Mr. Gray applied his yardstick, usually declining to draw a line between classes by nomenclature. His yardstick, however, included as officials many whom the leaders of the organizations objected to regarding as having confidential relations with the management, while the representatives of the labor organizations usually drew the line simply as between officials and employees. Mr. Gray said he would like to do so, but that the law apparently "requires us to step into a shadow land and recognize distinctions we have never known before."

L. K. Sherman, of the American Association of Engineers, classed as subordinate officials those below the rank of chief engineer, engineer maintenance of way and division engineer, or 95 per cent of a total of 20,000 engineers. Mr. Gray said the classification should be based on the responsibility to the company, which varied in different positions on different roads, but that no one on a railroad has the responsibility for the expenditure of greater sums of money or bears a more trusted relation to the management than the engineers.

S. S. Haycock, president of the National Order of Railroad Claim Agents, said he represented 2,300 claim agents below the rank of district claim agents who have no authority to hire or discharge men and whose authority in the settlement of claims is limited. Mr. Gray said he was informed that all claim agents have authority to represent the company to a finality up to the limit of their authority and that a claim agent has more than most men a confidential relation with the management.

O. B. Kirkpatrick, of the Railroad Traveling Auditors' Association of America, said the train auditors do not hire or discharge men, and he referred to them as supervisory officials. Mr. Gray said there was a great difference between supervisory and subordinate officials, and that traveling auditors are in a position of trust and responsibility.

W. V. O'Neil, of the International Association of Railroad Supervisors of Mechanics, urged recognition of general foremen, foremen and assistant foremen as subordinate officials, while B. M. Jewell, acting president of the Railroad Employees Department of the American Federation of Labor,

representing six federated shop crafts, said that those below the rank of general foremen should be classed as employees. He said that if they are to be represented by anyone outside of "their own organizations" it will result in dissension. J. B. Malloy, vice-president of the United Brotherhood of Maintenance of Way Employees, claimed jurisdiction over the track and bridge and building foremen as employees, although he said they often employ and discharge men. The Brotherhood of Railway Signalmen claimed jurisdiction of all below the rank of assistant supervisor of signals.

Mr. Gray said that his committee did not consider that a foreman who employs or discharges men and decides as to whether they shall work overtime should be classed as a subordinate official, but that gang leaders and many assistant foremen would come under that heading.

J. L. Coan, representing the Railroad Yardmasters of America, claimed jurisdiction over yardmasters and assistant yardmasters as subordinate officials on the ground that they are not properly either officials or employees. He considered general yardmasters as officials. W. N. Doak, vice-president of the Brotherhood of Railroad Trainmen, who said he was also authorized to speak for the Switchmen's Union, said that the great majority of yardmasters and assistant yardmasters are members of those two organizations, 3,106 in his and 550 in the Switchmen's Union, and he pointed out that Mr. Coan had not said how many he represented. He insisted that they should be classed as employees and the general yardmasters as officials. Mr. Gray thought the assistant yardmasters might be called subordinate officials.

J. G. Luhrsen, president of the Train Despatchers' Association, said he represented 5,300 out of a possible 5,500 despatchers, who, he said, had been recognized as subordinate officials by former Director General McAdoo, who had also recognized the right of the association to represent them. They do not employ or discipline men, he said, and do not have confidential relations with the executive officials. L. J. Ross, of the Order of Railroad Telegraphers, said his organization had always represented the despatchers, and included 3,000 of them as members, and that they are not officials. He said his organization had contracts covering despatchers on seven roads, to which Mr. Luhrsen replied that that was evidence they need another organization to get them contracts with the other roads. He also said that E. J. Manion, president of the Order of Railroad Trainmen, had recently claimed only 20 per cent of the despatchers at a recent conference with the commissioners. Mr. Ross said that Mr. Manion had claimed that many because he didn't know but that he had looked the matter up since and found 3,000. Mr. Gray said he had always considered the despatchers as officials and had been instrumental in getting them more pay than they would have received otherwise.

E. H. Morton, president of the Order of Railroad Station Agents, claimed jurisdiction over the supervisory agents as subordinate officials, while Mr. Ross said all agents were employees.

The question as to whether the regulations governing the making of nominations for the Labor Board should be modified brought out a vigorous demand on the part of various organizations not included in the 16 organizations that call themselves the "standard recognized" organizations for recognition of their right to make nominations. These organizations said that they were in no way affiliated with the American Federation of Labor, and that their views would not be represented by nominees of the so-called standard organizations. The hearing at times developed into a heated exchange of compliments between the officers of rival organizations.

The representative of five organizations of colored employees, authorized to speak for 53,000 men and claiming to represent a total of 200,000, asked that they be included in a group of employees for the purpose of making nominations.

P. J. Coyle, president of the Brotherhood of Railroad Station Employees, said his organization wanted recognition, although the nominees of the other organizations might be entirely satisfactory to it.

B. F. Richardson, president of the National Federation of Railroad Workers, was particularly vigorous in his demand for recognition. He said he had called on Chairman Aitchison of the commission, who had suggested that he join with the other organizations in the selection of nominees, but that in view of the hostility between his organization and other organizations of shop employees he had not considered the plan advisable. He could not understand why his federation was denied the right to nominate a representative for the labor board because he represented 35,000 employees, whereas the Brotherhood of Stationery Firemen and Oilers had been included in a group, although he had never met one of their members in all his 29 years of railroad experience. He said that rules such as those proposed by the commission, like the Anderson amendment to the Esch bill, naming specific organizations, amounted to giving those organizations a patent by law to represent all employees. He said he did not know whether his organization wanted to make a nomination, but it wanted its rights recognized. When Mr. Jewell asserted that the federated shop crafts did not attempt to maintain a closed shop and did not discriminate against non-members, Mr. Richardson retorted that they had driven his members out of the shops in some cases and had influenced elections at which the men were allowed to vote as to which organization should represent them.

L. K. Sherman, of the American Association of Engineers, asked for representation on the Labor Board on behalf of the professional engineers, who, he said, have not had the prerogatives of officials nor the advantages of having a labor organization to represent them, and he asked a modification of the regulations to allow his organization to make a nomination. Mr. Luhrsen for the train despatchers, Mr. Morton for the station agents, and the other representatives of the so-called subordinate officials also asked for a similar modification, after which Chairman Clark of the commission explained that as a practical matter the commission was faced with the necessity of prompt action in order that the nominations might be made within the 30 days allowed by the law and that as all of the organizations recognized the will of the majority the commission thought it had reached a practical solution when it had selected the organizations representing the great majority of railroad employees. He said it would not be helpful to have nominations made to the President by all organizations or groups of employees that might have individual ideas as to the nominations.

The representatives of the labor organizations, Mr. Ross for the telegraph operators, Mr. Jewell for the federated shop crafts, and Mr. Doak for the trainmen, then asked that the commission decline to modify its regulations on the ground that their organizations properly represented the great majority both of employees and of subordinate officials. Mr. Jewell said it would be dangerous to let the subordinate officials select one-third of the labor group on the board when they constitute less than 5 per cent of the total number of railroad employees, whereas the 95 per cent had been for years represented by the standard recognized organization. He also said that if one of the labor group should be a subordinate official, then the official class would have four representatives on the board against two for labor. He said the bill does not now give railroad employees sufficient representation, but that they had proposed to let the machine make one revolution to see what kind of grist it turns out and then if it prove unsuccessful they would attempt to get the law changed by electing men to Congress who would change it.

The hearing was concluded on Tuesday noon, and Chairman Clark announced that a decision would be reached as speedily as possible.

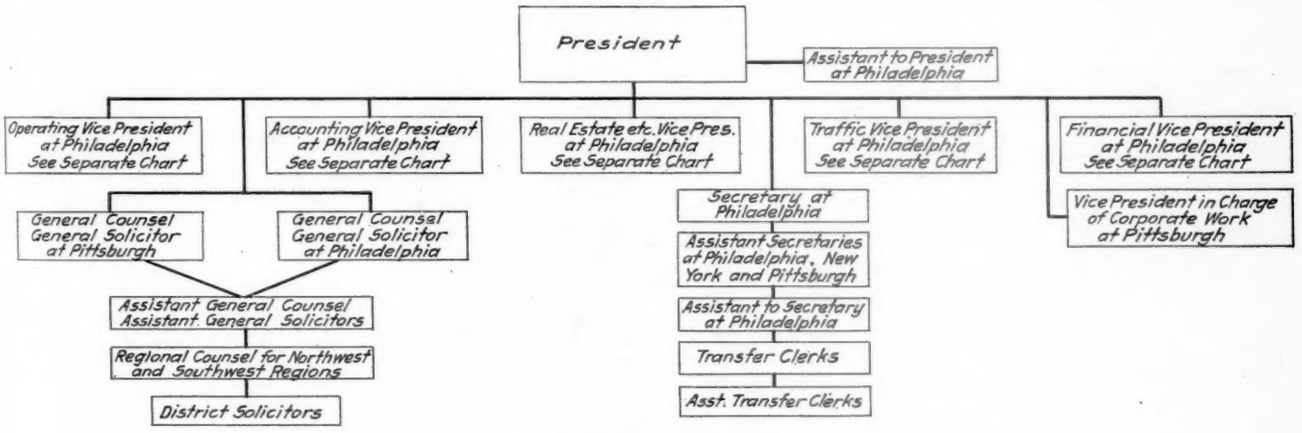
The New Pennsylvania Regional Organization

The Four Regions Bound Together by a Departmental Organization Permitting Centralized Authority and Expert Supervision

A BRIEF DESCRIPTION of the new organization of the management of the Pennsylvania Railroad was published in the *Railway Age* of February 20, together with a map showing the four regions into which the system has been divided for operating purposes. The accompanying chart has been compiled by the *Railway Age* and is an attempt to show graphically the new organization. It will be seen that there is an executive department, consisting of the president and five department or executive vice-presidents. In addition there is a vice-president in charge of corporation affairs at Pittsburgh, a secretary and a legal department. The vice-presidency at Pittsburgh is rather outside of the general scheme of organization and is in the nature of a special establishment to wind up or straighten out the intricate intercorporation relations of the Lines West.

The five departments, each head by an executive vice-president, are the operating, the traffic, the accounting, the real estate and purchases and the finance. These departments are on a par and differences between them are for settlement by the president. Each department has a staff of its own, but on the staff of the operating vice-president are four regional vice-presidents and a vice-president in charge of personnel, and attached to the staff of the regional vice-presidents, but none of it, are members of the staff of the traffic department, the accounting department and the real estate and purchasing department. The legal department also has members of its staff attached to the Northwestern and Southwestern regions.

Before treating of the operating department, which is of course by far the most complicated, it is well to take up the other four departments.


President
Assistant to President at Philadelphia
Operating Vice President at Philadelphia See Separate Chart
Accounting Vice President at Philadelphia See Separate Chart
Real Estate etc. Vice Pres. at Philadelphia See Separate Chart
Traffic Vice President at Philadelphia See Separate Chart
Financial Vice President at Philadelphia See Separate Chart
General Counsel General Solicitor at Pittsburgh
General Counsel General Solicitor at Philadelphia
Assistant General Counsel Assistant General Solicitors
Regional Counsel for Northwest and Southwest Regions
District Solicitors
Secretary at Philadelphia
Assistant Secretaries at Philadelphia, New York and Pittsburgh
Assistant to Secretary at Philadelphia
Transfer Clerks
Asst. Transfer Clerks
Vice President in Charge of Corporate Work at Pittsburgh

The Executive Department

The Traffic Department

The vice-president of the traffic department has his headquarters at Philadelphia and has as his second in command the general traffic manager. The vice-president, through the general traffic manager, appoints, transfers, etc., all members of the traffic department and has all members of this department on his payroll, including the regional traffic officers. Reporting to the general traffic manager at Philadelphia and through him to the vice-president, are a manager of through freight, a chief of mail service and traffic at Philadelphia and an express traffic agent at Philadelphia, and in addition there is a traffic manager for each of the four regions. Each of these regional traffic managers has a staff including a freight traffic manager and passenger traffic manager and their subordinates, the policies of all of whom are dictated by the regional traffic manager, who in turn reports to the general traffic manager and the vice-president in charge of traffic. When we come to the operating organization we will see that the regional traffic managers are attached to the staff of the regional vice-presidents, but these traffic men and their staff are on the payroll not of the regional vice-president, but of the executive traffic vice-president.

As shown on the chart, the staff of the freight traffic manager of each region consists of an assistant freight traffic manager, general freight agent, assistant general freight agent, division freight agents, a warehouse superintendent, foreign freight agent, a general coal freight agent and a coal freight agent at Pittsburgh, and a freight claim agent. At Chicago and St. Louis there are no general freight coal agents and at Pittsburgh no foreign freight agent. The warehouse superintendent is a system officer having his headquarters at Pittsburgh, and is jointly on the staff of the operating department and the traffic department.

The passenger traffic manager of each region has on his staff a general passenger agent, assistant general passenger agents, general baggage agent, assistant general baggage agent, divisional passenger agents, and a superintendent of restaurant service. The superintendent of restaurant service has his headquarters at New York and Columbus, Ohio, and has two assistants at New York and one assistant at Columbus.

The Accounting Department

The vice-president in charge of accounting has his office at Philadelphia and under him are two controllers, one at Philadelphia and one at Pittsburgh. Reporting to each of these controllers are two assistant controllers, one in charge of corporate accounting and one in charge of operating accounting. The two assistant controllers have general accountants reporting jointly to them. The staff of the controllers consists of an auditor of revenue, assistant auditor of revenue, an auditor of through freight traffic and an as-

sistant auditor of through freight traffic, an auditor of through passenger traffic and an assistant auditor of through passenger traffic, an auditor of local freight traffic and assistant auditors of local freight traffic, and an auditor of local passenger traffic and assistant auditors of local passenger traffic.

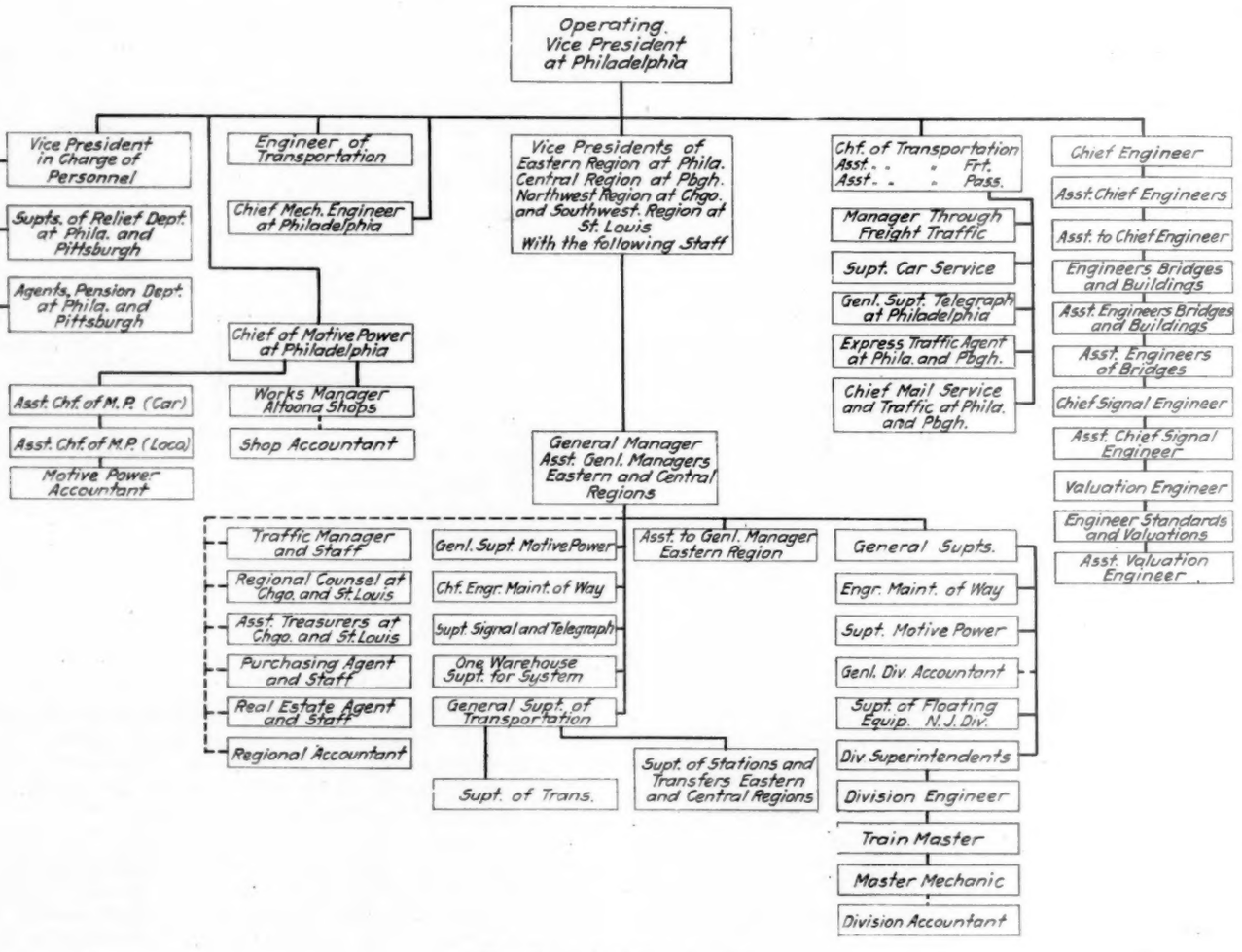
Ranking on a par with the auditor of revenue is an auditor of expenditures, with an assistant auditor of expenditures, auditors of disbursements at Philadelphia and Pittsburgh, assistant auditors' of disbursements at Philadelphia and Pittsburgh, a regional accountant for each region, a general division accountant for each grand division of each region and a divisional accountant for each division of each region. Reporting to each regional accountant is a shop and motive power accountant.

It will be seen from the chart of the operating organization that each general manager of a region has attached to his staff a regional accounting officer, who, however, is on the payroll and under the orders of the vice-president in charge of accounting. Likewise each general superintendent has attached to his staff a general division accountant, who is on the payroll and under the orders of the regional accountant and, through him, of the vice-president in charge of accounting; and also each division superintendent has attached to his staff a division accountant who is on the payroll of the accounting department. The auditor of revenues and his staff and the auditor of expenditures and his staff each report both to the assistant controller of corporate accounting and the assistant controller of operating accounting.

Real Estate and Purchasing Department

The vice-president in charge of real estate, purchases and insurance has his office at Philadelphia and has on his staff a general purchasing agent, with office at Philadelphia, a general superintendent of stores, a superintendent of insurance and a general real estate agent.

The general purchasing agent has on his staff a purchasing agent for each of the four regions, with assistant purchasing agents for the Eastern, Central and Northwestern regions, and also an assistant to the purchasing agent for the Eastern region. It will be seen that the general manager of each region has attached to his staff a purchasing agent and his staff, these officers, however, being on the payroll of the purchasing department and not of the operating department.

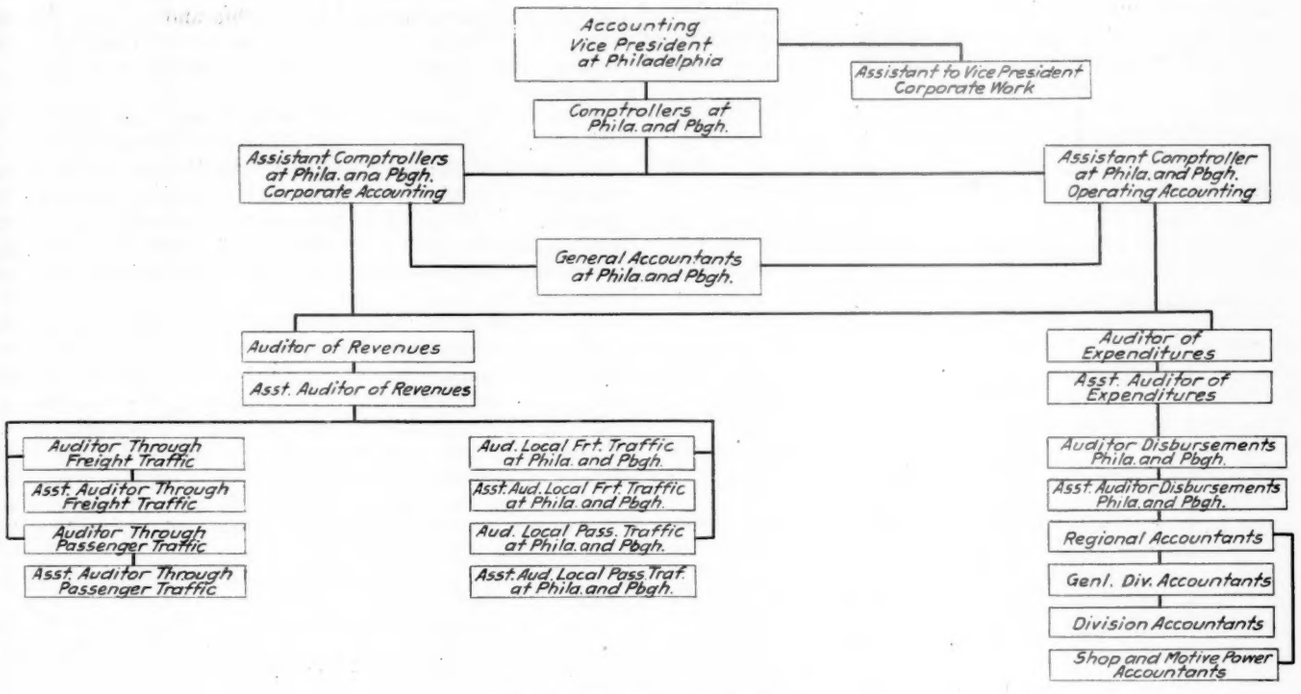

Operating Vice President at Philadelphia
Vice President in Charge of Personnel
Supts. of Relief Dept. at Phila. and Pittsburgh
Agents, Pension Dept. at Phila. and Pittsburgh
Engineer of Transportation
Chief Mech. Engineer at Philadelphia
Chief of Motive Power at Philadelphia
Asst. Chf. of M.P. (Car)
Asst. Chf. of M.P. (Loco)
Motive Power Accountant
Works Manager Altoona Shops
Shop Accountant
Vice Presidents of Eastern Region at Phila. Central Region at Pbgh. Northwest Region at Chgo. and Southwest Region at St. Louis With the following Staff
General Manager Asst. Genl. Managers Eastern and Central Regions
Traffic Manager and Staff
Regional Counsel at Chgo. and St. Louis
Asst. Treasurers at Chgo. and St. Louis
Purchasing Agent and Staff
Real Estate Agent and Staff
Regional Accountant
Genl. Supt. Motive Power
Chf. Engr. Maint. of Way
Supt. Signal and Telegraph
One Warehouse Supt. for System
General Supt. of Transportation
Supt. of Trans.
Asst. to Genl. Manager Eastern Region
Supt. of Stations and Transfers Eastern and Central Regions
Chf. of Transportation
Asst. " Frt.
Asst. " Pass.
Manager Through Freight Traffic
Supt. Car Service
Genl. Supt. Telegraph at Philadelphia
Express Traffic Agent at Phila. and Pbgh.
Chief Mail Service and Traffic at Phila. and Pbgh.
General Supts.
Engr. Maint. of Way
Supt. Motive Power
Genl. Div. Accountant
Supt. of Floating Equip. N.J. Div.
Div. Superintendents
Division Engineer
Train Master
Master Mechanic
Division Accountant
Chief Engineer
Asst. Chief Engineers
Asst. to Chief Engineer
Engineers Bridges and Buildings
Asst. Engineers Bridges and Buildings
Asst. Engineers of Bridges
Chief Signal Engineer
Asst. Chief Signal Engineer
Valuation Engineer
Engineer Standards and Valuations
Asst. Valuation Engineer

The Operating Department

The general superintendent of stores has on his staff a general storekeeper, a district storekeeper, a division storekeeper and a local storekeeper. The superintendent of insurance has on his staff assistant superintendents and assistants to the superintendent. The general real estate agent has on his staff a real estate agent for each of the four regions, with assistant real estate agents for the Eastern and Central regions. These regional real estate agents are attached to the staff of the general manager of each region, but are on the payroll of the purchasing department.

Finance Department

The vice-president in charge of finance is at Philadelphia and his staff is shown on the chart, except that attention should be called to the fact that the treasurer at Philadelphia will act as assistant treasurer for the Lines West and the treasurer at Pittsburgh as assistant treasurer for the Lines East.

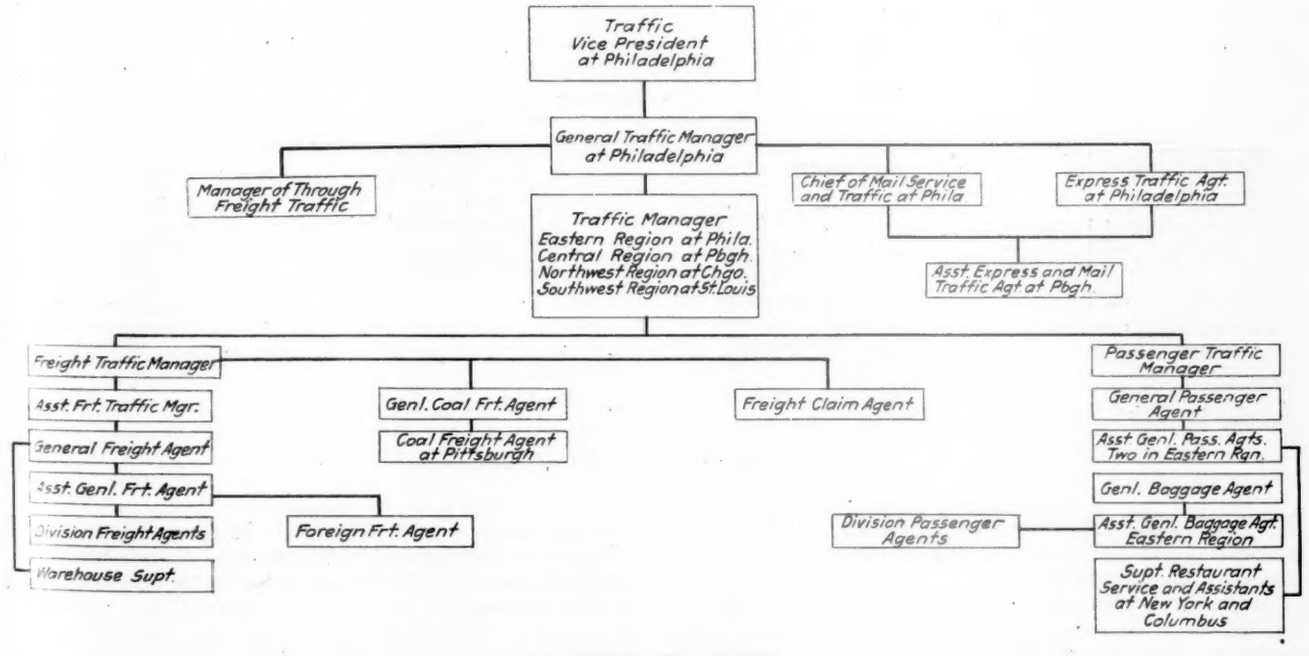

Accounting Vice President at Philadelphia
Assistant to Vice President Corporate Work
Comptrollers at Phila. and Pbgh.
Assistant Comptrollers at Phila. and Pbgh. Corporate Accounting
Assistant Comptroller at Phila. and Pbgh. Operating Accounting
General Accountants at Phila. and Pbgh.
Auditor of Revenues
Asst. Auditor of Revenues
Auditor Through Freight Traffic
Asst. Auditor Through Freight Traffic
Auditor Through Passenger Traffic
Asst. Auditor Through Passenger Traffic
Aud. Local Frt. Traffic at Phila. and Pbgh.
Asst. Aud. Local Frt. Traffic at Phila. and Pbgh.
Aud. Local Pass. Traffic at Phila. and Pbgh.
Asst. Aud. Local Pass. Traf. at Phila. and Pbgh.
Auditor of Expenditures
Asst. Auditor of Expenditures
Auditor Disbursements Phila. and Pbgh.
Asst. Auditor Disbursements Phila. and Pbgh.
Regional Accountants
Genl. Div. Accountants
Division Accountants
Shop and Motive Power Accountants

The Accounting Department

Operating Department

The vice-president in charge of operation acts in the absence of the president as president. The vice-president in charge of operation has on his staff a vice-president in charge of personnel, four regional vice-presidents, a chief engineer with his staff, a chief of motive power with his staff, a chief of transportation with his staff, a chief mechanical engineer and an engineer of transportation.*

The vice-president in charge of personnel has superintendents of relief at Philadelphia and at Pittsburgh, but these two relief departments are to be consolidated later;

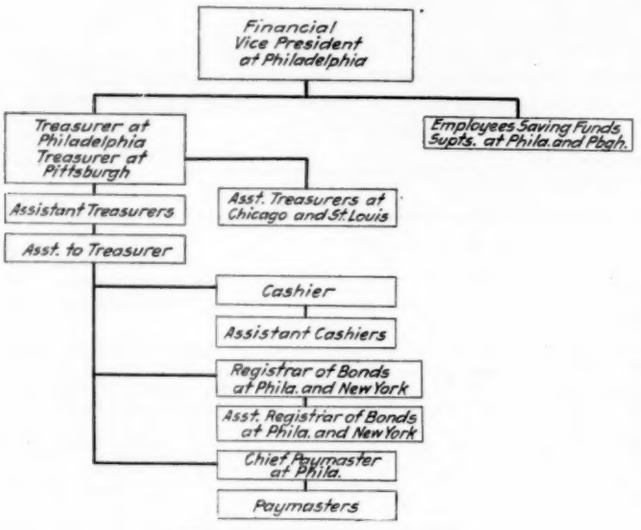

Traffic Vice President at Philadelphia
General Traffic Manager at Philadelphia
Manager of Through Freight Traffic
Traffic Manager Eastern Region at Phila. Central Region at Pbgh. Northwest Region at Chgo. Southwest Region at St. Louis
Chief of Mail Service and Traffic at Phila.
Express Traffic Agt. at Philadelphia
Asst. Express and Mail Traffic Agt. at Pbgh.
Freight Traffic Manager
Asst. Frt. Traffic Mgr.
General Freight Agent
Asst. Genl. Frt. Agent
Division Freight Agents
Warehouse Supt.
Foreign Frt. Agent
Genl. Coal Frt. Agent
Coal Freight Agent at Pittsburgh
Freight Claim Agent
Passenger Traffic Manager
General Passenger Agent
Asst. Genl. Pass. Agts. Two in Eastern Rgn.
Genl. Baggage Agent
Asst. Genl. Baggage Agt. Eastern Region
Division Passenger Agents
Supt. Restaurant Service and Assistants at New York and Columbus

The Traffic Department

*The duties of the engineer of transportation, which has no exactly equivalent title in any former American railroad organization, will be described fully in a later issue of the *Railway Age*.

and agents of the pension department at Philadelphia and Pittsburgh, which offices are later to be consolidated.

The vice-president of each region has a general manager and an assistant general manager in the case of the Eastern and Central regions. On the staff of the general manager are general superintendents (one for each grand division of the region), and on the staff of each general superintendent are division superintendents for each division; and attached


Financial Vice President at Philadelphia
Treasurer at Philadelphia Treasurer at Pittsburgh
Employees Saving Funds Supts. at Phila. and Pbgh.
Assistant Treasurers
Asst. Treasurers at Chicago and St. Louis
Asst. to Treasurer
Cashier
Assistant Cashiers
Registrar of Bonds at Phila. and New York
Asst. Registrar of Bonds at Phila. and New York
Chief Paymaster at Phila.
Paymasters

The Financial Department

to the staff are an engineer of maintenance of way, a superintendent of motive power, a general divisional accountant mentioned under the accounting department, and in the case of the New Jersey division, a superintendent of floating equipment. Each superintendent has on his staff a division engineer, trainmaster, master mechanic and a division accountant, mentioned under the accounting department.

Attached to the staff of the general manager of each region is a traffic manager on the payroll of the traffic department, a regional counsel on the payroll of the legal department, assistant treasurer on the payroll of the pension department, a purchasing agent and a real estate agent, both on the payroll of the real estate and purchasing departments, and a regional accountant on the payroll of the accounting department.

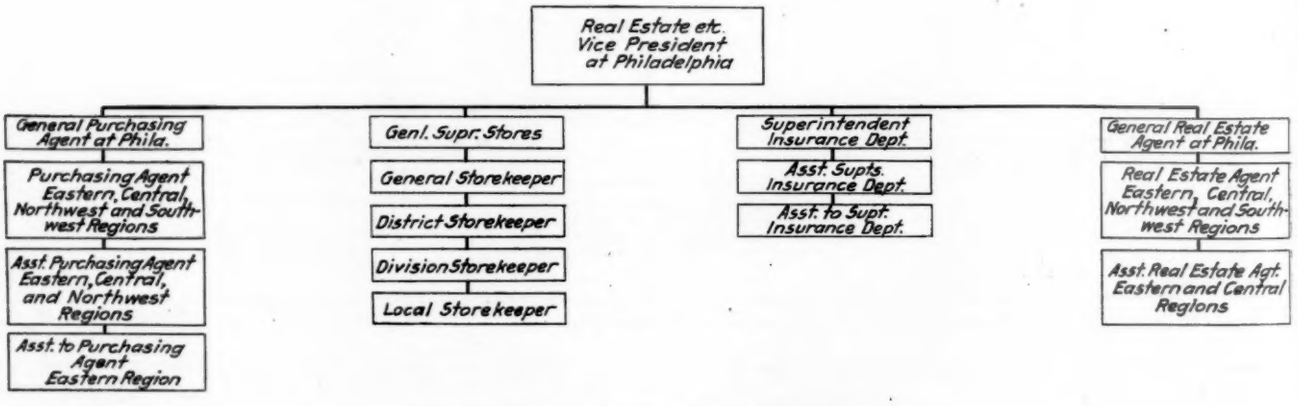
Attached to the general manager's staff also is a general superintendent of motive power, chief engineer of maintenance of way, a superintendent of signals and telegraphs, a warehouse superintendent (there is only one warehouse superintendent, however, for the entire system and he is attached to the staff of each of the five regions), and a general superintendent of transportation, who has on his staff a superintendent of transportation and, for the Eastern and Central regions, superintendents of stations and transfers.

The general superintendent of motive power is on the payroll not of the general manager, but of the chief of motive power, who reports direct to the vice-president in charge of operation.

The chief engineer of maintenance of way, likewise, is attached to the staff of the general manager, but on the payroll of the chief engineer, who in turn reports direct to the vice-president in charge of operation; likewise, the general superintendent of transportation, attached to the general manager's staff, is on the payroll of the chief of transportation, who reports directly to the vice-president in charge of operation.

The staffs of the chief of motive power, chief engineer and chief of transportation are shown quite clearly on the chart, although attention should be called to the fact that the motive power accountant and the shop accountant are on the payroll of the accounting department, not of the motive power department; and attention should also be called to the works manager, reporting direct to the chief of motive power and in charge of the Altoona shops, with the authority and responsibilty that the manager of an industrial manufacturing plant would have.

THE CANADIAN PACIFIC, through the president, E. W. Beatty, announces that annual passes will be granted to officers and employees and their wives under the following classifications: employees on a general superintendent's district, who have had continuous service for a period of not less than 10 years, will be granted an annual pass good over the district on which they are employed; employees who have had continuous service for 20 years and over, will be allowed an annual pass good over either the Eastern or Western lines upon which they are employed; employees of any other department of the service will enjoy the same privilege as the above, over such territory as is desired; general office employees, who have had 15 years' service will receive annual passes over Eastern or Western lines where employed; women employees are to be treated the same as men in this connection.


Real Estate etc. Vice President at Philadelphia
General Purchasing Agent at Phila.
Purchasing Agent Eastern, Central, Northwest and Southwest Regions
Asst. Purchasing Agent Eastern, Central, and Northwest Regions
Asst. to Purchasing Agent Eastern Region
Genl. Supr. Stores
General Storekeeper
District Storekeeper
Division Storekeeper
Local Storekeeper
Superintendent Insurance Dept.
Asst. Supts. Insurance Dept.
Asst. to Supt. Insurance Dept.
General Real Estate Agent at Phila.
Real Estate Agent Eastern, Central, Northwest and Southwest Regions
Asst. Real Estate Agt. Eastern and Central Regions

The Purchasing and Real Estate Department

A RED CROSS PRIZE of $50 has been awarded to Engineman John P. Kelly, Fireman Reger and Richard Laurie, telegrapher, employed on the Buffalo, Rochester & Pittsburgh, for quick action in "first aid," which saved the life of Patrick Murphy, whose leg had been run over after he had uncoupled a locomotive from its train.

The Railway Labor Situation Today and Tomorrow*

Creation of an Incentive Will Stimulate Production—Conciliation and Optimism Needed

THE LABOR PROBLEM today is universal and there has been so much thought given it and so much said regarding it that it is difficult to do more than reiterate salient facts which have crystallized out of the general problem.

A situation confronts us today unlike any before experienced, and to counteract its effect it is essential that its significance be fully appreciated, as it will call for the full efforts of all who believe in democracy and the maintenance of democratic ideals. The influence which is now being brought to bear to undermine the social structure of the world is making itself felt through many other channels than labor, but it has undeniably had a tremendous effect on labor conditions.

During and following the crisis through which the world has just passed, the laboring man, forced by the high cost of living, sought to better his position, and, influenced by propaganda, he directed his efforts not only toward increased wages but on a reduction in working hours, and the results are fast leading to another and even greater crisis. When hours decreased, production decreased; the unit of production cost more to create and the employer was forced to increase his price to the consumer in order to maintain his income, with the result that the value of the dollar depreciated proportionately and the situation was relatively the same as prior to the initial change. This decrease in production, however, had another effect. It required that more labor be employed to obtain the same output, and the natural result is the present shortage of labor.

It is recognized that it is not possible to realize the same production in the eight as in the ten-hour day, but had this been possible it would not have been necessary to increase prices, the cost of living would not have increased, the value of the dollar would not have decreased, and the world in general, but the laboring man in particular, would have been greatly benefited. As long as wages are advanced and production decreases or even remains the same, the cost of living must necessarily increase and the circle becomes endless. It is absolutely impossible for the laboring man to make headway against the cost of living by the methods that are being followed today. The one and only relief is increased production. Germany has already realized this fact and her workingmen have voted for the eleven-hour day in order that production may meet the demands and again permit them to wage the fight for commercial supremacy. How this increased production is to be obtained in America, however, is the real problem of the present time.

It is apparently necessary first to stimulate production by creating an incentive to produce. We cannot today outline a method that may be pronounced "best," but some manufacturing concerns are now trying methods which will, no doubt, create an interest on the part of the employees in the success of the business. It will probably be very difficult to apply any plan that is being tried at the present time to the railroads on account of the diversity of work and the extent of the territory they cover, but out of the numerous plans that are being tried one should be evolved which will gain the desired results, and the mutual efforts of employers and employees along these lines can, without question, create a successful plan.

In connection with any campaign to increase production it will be necessary to undertake a thorough and systematic education, applied particularly to those who have come to us from foreign countries and who speak our language but poorly, and who do not understand our institutions and our ideals. Their very misunderstanding creates fertile soil for the growth of radical ideas that are the subject of a systematic and universal propaganda today.

If the evil is to be entirely overcome it will require the combined efforts of every loyal citizen of America, it will require that citizens exercise fully and properly their right of franchise; that responsible, reasonable men may be elected to offices in our city, state and national government. While it might be supposed that this is universally recognized, the fact remains that throughout the entire United States educators are being forced to leave their stations and accept more lucrative positions in order to meet the present increased cost of living, and our city governments are not taking steps to remedy this evil. Education is the best antidote for radicalism, though without doubt it will not be effective in all cases. Steps are under way now, however, to cope with the radical leaders through proper legislation, and such legislation will probably be made effective in the near future so that our immediate attention might be turned to the followers rather than to the leaders.

By education is meant the broad sense of the term, not merely class-room teachings of the English language, but instruction in American institutions, ideals and the spirit of fair play, and it is suggested that the man on the ground, that is, the supervisor who comes in closest contact with the working man, can accomplish far more in this respect than any one else. By keeping in close touch with his men; providing for their needs; listening patiently to their grievances; always applying discipline when necessary, but only when necessary, and then only after the man concerned has been given full opportunity to be heard and such discipline administered with the idea of saving instead of losing the man, he will gradually gain their full confidence and respect and his troubles from the labor standpoint will proportionately diminish.

There is a feeling on the part of a great many individuals that unionism alone is responsible for the present situation, and it is suggested that a more optimistic view of relationship with labor organizations and a co-operation with them along reasonable lines will be quite effective in removing some of the present difficulties and eliminating some of the present feelings. Conciliation will gain more than opposition. The real cause of this feeling is, no doubt, the influence being exerted by the radical elements that constitute a small minority of present-day labor organizations, just as this influence is also being exerted in our political life. It can be counteracted most effectively by the older and more reasonable members taking an active part in affairs and exerting their influence to counteract the ill effect, just as in our political life, the influence of the radical element may be eliminated by the full exercise of franchise on the part of the loyal citizens of the country.

When we are able to free ourselves of the radical elements, to properly educate others, to increase our production to meet or exceed present-day demands, to reach the point where the employer and employee will meet and discuss with reason their difficulties there will be little left of "the labor problem." This may appear to be an extremely optimistic view of the situation and may further appear to be so far in advance of present-day conditions as to be Utopian, but it is

*From a paper presented by Frank H. Hardin, before the Central Railway Club, March 12, 1920.

suggested that optimism is the prime requisite in the battle and that pessimism is always defeated before the fight begins.

D. R. MacBain (New York Central) offered some suggestions for supervising officers. He stated that although the task of the supervisors seems hopeless, optimism is needed. He ascribed much of the present difficulty to lack of personal contact and the tendency on the part of the local officers to evade their responsibilities. To show that socialistic rule made conditions worse for the workers he cited the fact that Russian workmen are compelled to labor 13 hours, seven days a week. The dissemination of such information was urged by Mr. MacBain as a means of combating the tendency toward bolshevism.

W. O. Thompson (New York Central) argued that the keynote to the situation was getting close to the men.

W. Flynn (Michigan Central) expressed the opinion that the labor problem is not insurmountable and that the solution lies in education and optimism.

F. C. Pickard (D. L. & W.) stated that the roads were now going through a transition period and the tendency is in the right direction. In his opinion, troubles could be minimized if an effort was made to adjust grievances promptly.

J. J. Rossiter (New York, Chicago & St. Louis) laid the blame for the present unrest on the radical element, whose slogan is higher wages and less work. As long as this propaganda is heeded it will be impossible to bring the cost of living down. Although strikes have recently been called off, it is doubtful whether the men are now giving fair production. Mr. Rossiter believed the remedy lay in the overcoming of the radicals by the conservatives in the labor organizations.

L. D. Gillet (Dominion Railway Commission of Canada) expressed the opinion that in the labor situation at present bolshevism of the worst type must be contended with, and inwardly many are viewing the problem with extreme pessimism. Labor has learned the strength of organization, and the situation is made worse by the fact that a small number of men who have been in the army have become agitators. One man of this type can have a bad influence on a hundred others.

W. A. Buchanan (D. L. & W.) submitted that if the principles brought out in the paper were applied every day a marked improvement would be effected. He suggested that the more general use of machinery would aid in increasing production.

F. W. Brazier (New York Central) expressed the opinion that production has now decreased to the danger point. The present labor organization discourages direct contact between the officers and the men, and the incentive for production has been removed under present rules. The big problem is to restore the morale. The only salvation is in more production, and conciliation is needed to bring results.

C. L. McIlvaine (Pennsylvania) cited some examples of high production under present conditions, and stated that it is a mistake to condemn men as a whole for the acts of a few. Labor has suffered because of poor leadership, but the tendency now was to break away from the radical element, and he thought that a great improvement could be effected if the management did not antagonize the men.

AUTOMOBILE TRAFFIC IN CALIFORNIA.—Proceedings before the Railroad Commission of California during the months of January and February, 1920, indicate the remarkable growth of the automobile transportation business in California. According to the records of the service department of the Commission, 52 applications for permits to carry freight and passengers were filed in the first two months of this year. There were also filed 25 requests for the Commission's approval of sales or transfers of existing lines. During the same period the Commission dismissed 17 applications for operating permits, denied 9 and granted 13. Seven transfers were approved.

Report on Walton Collision

THE INTERSTATE COMMERCE COMMISSION has issued a report, dated January 6, and signed by W. P. Borland, chief of the Bureau of Safety, on the rear collision which occurred on the Norfolk & Western at Walton, Va., on December 18. In this collision, in which five passengers were killed, the leading train, which was at a standstill, consisted of eight steel cars and three wooden cars, the wooden cars being at the rear end; and the report calls attention to the probability that if all the cars had been steel the results would have been far less disastrous.

The trains were eastbound passenger No. 4, second section, and eastbound passenger No. 26. The leading train was standing at a water tank some 2,000 ft. east of the tower located at the junction where the trains had come on to this line, No. 4 coming from the Bluefield line, and No. 26 from the Bristol line. The time was about 6:44 p. m. (dark), and the weather was clear. No. 26 had passed signal 8L, about 1,287 ft. back of the point of collision, and was moving under a calling-on signal. The engineman claims to have passed through a cloud of steam or smoke, blowing from a standing locomotive, which impeded his view; but regardless of this feature of the case, which is not corroborated by other witnesses, he was bound to proceed under control. He had made, before this, only two trips with this train.

The fireman excused himself for not seeing signal 8L because he was looking out on the left side of the engine to see the position of the train-order signal. Between signal 8L and the point of collision the engineman worked steam for some little distance, and this also appears to have led the fireman to think that the engineman was in proper control of the movement of the train. Testimony concerning the speed of No. 26 a few hundred feet back from the point of collision varied from 15 miles an hour to 25 miles an hour, except that the operator at the tower and a road foreman of engines, who was nearby, put it much faster, the road foreman estimating the rate at 35 miles an hour.

The engineman had been in the service 41 years and a runner for 37 years. The flagman of the standing train, who is censured for not going back fast enough, has been in the service about four years. Both had good records.

The report censured the operator for exercising poor judgment in using the calling-on signal for a movement of this kind when a passenger train was standing in the block; a positive block should have been maintained; but it says that the practice had grown up at this place, apparently from lack of supervision. The legitimate use of the calling-on signal was that of facilitating the movement of pusher engines used on freight trains, and it should have been confined to this. A train receiving the permissive indication of the calling-on signal is not required to come to a stop; so, therefore, the arrangement is not so safe as ordinary automatic block signal practice.

The fireman, who had been accepted, seven years ago, as competent to act as engineman, was found to be faulty in his understanding of the indication of the permissive indication of the calling-on arm. He thought it was the same as the 45 deg. position of an automatic block signal, permitting the train to proceed, expecting to be stopped at the next block signal. And the conclusion that the report seems to reach was that the engineman's carelessness was probably due to this impression; that this signal, displaying a yellow light, was to be taken the same as an automatic block signal displaying a yellow light. Still, it appears that the line of road was straight, the weather clear, and the grade level or nearly level; so that the presence of the smoke or steam—a point which was disputed—was the only element which could have hindered the engineman from seeing the red tail lights of the standing train. The engineman said that he did not see the red light carried by the flagman, who had got back about 200 ft. to 400 ft.

Reply to Postmaster General in Mail Pay Case

Railway Mail Pay Committee Says if Rehearing Is Granted Case Should Be Reopened in Entirety

WASHINGTON, D. C.

THE COMMITTEE OF ATTORNEYS for the Railway Mail Pay Committee representing the railroads has filed with the Interstate Commerce Commission a reply to the petition of the postmaster general for a rehearing of the railway mail pay case decided by the commission in January, and the establishment of a new and reduced scale of rates in place of those put into effect under the order of the commission. The committee states that it may be questioned whether under the terms of the statute the re-examination of the rates established may be had until after the lapse of six months from the entry of the commission's order; that the petition of the postmaster general is not based upon any failure on the part of the commission to exercise its jurisdiction in accordance with the statute, upon any error of law or upon any misapprehension of the facts, but is directed solely to an attack upon the conclusions reached by the commission. All matters in issue between the trunk line carriers and the department were fully presented to the commission, the committee states, were thoroughly understood, carefully weighed and maturely decided in an opinion "which discloses on its face an intelligent grasp of all of the complicated questions involved, never excelled and scarcely equalled in judicial literature."

However, the conclusions reached by the commission are said to be unsatisfactory to the carriers as well as to the department and if there is to be a reexamination of the merits of the case then such reexamination should not be a one-sided one, involving a reconsideration of the contentions of the department only, but should cover the whole case and should embrace a reexamination of the contentions of the railroads as well as those of the department. If the case is to be reopened, therefore, it is contended that it should be reopened in its entirety and the carriers should be given an opportunity to show to the commission wherein it erred in the establishment of the space basis and likewise wherein the rates fixed, if the space basis should again prevail, are unreasonably low, and to direct to the attention of the commission all other particulars in which the carriers contend its conclusions are erroneous or in which its order should be revised.

In the opinion of the carriers, the commission erred in not adopting the combination weight and space basis proposed by the carriers in fixing rates which in their judgment are too low based upon the whole record, and the opinion as in other respects, set forth in detail, declared to be unduly prejudicial to the carriers. Independently of these facts, however, the carriers were of the opinion that the order of the commission should be given a fair trial for the six months' period named in the statute and have, therefore, hitherto filed no petition for a rehearing. Believing that the post office department in its instructions purporting to put the order of the commission into effect had issued instructions in conflict therewith, the carriers had filed a petition for a ruling to determine whether the instructions were or were not in conformity with the order. Upon this, it is stated, the commission has now ruled against the carriers.

The short lines had also filed a motion for further findings upon the part of the commission based upon a question of law. This motion has since been denied by the commission.

Department Proposes Lower Rates Than in Law

The railroad committee states that the final results of the criticisms of the postmaster general are embodied in a scale of rates proposed for application in lieu of those fixed by the commission and set forth in the petition for a rehearing, which is substantially lower even than the rates named in the act of July 28, 1916. The total annual revenue based on the rates proposed by the department is stated to be $57,913,755. The actual annual revenue of routes on space rates for the service as of March 27, 1917, including initial and terminal pay, was $59,753,679. Dividing the total estimated revenue under the rates proposed by the equated 60-foot car miles of service as of March 27, 1917, the new rates would yield an average rate per car mile of 23.03 cents, while the average car mile revenue under the old basis was 23.69 cents. The department's new proposals, as well as its original ones, therefore, contemplate a substantial reduction in mail rates and revenue. In view of the commission's finding that by every standard and test, the failure of the mail revenue to keep pace with the growth of freight and passenger revenue in the face of a substantial equivalent growth in volume of traffic handled, comparison with freight rates leading to the conclusion found by the commission that the mail rates were by that standard alone unreasonably low, as well as judged by the commission's careful examination of the statistical study itself, it is declared that the petition for a rehearing might well be dismissed on general grounds and without any elaborate investigation, because the petition resolves itself in the last analysis to a mere restatement of facts and arguments already fully presented to the commission.

Taking up in detail the points made by the department the reply of the carriers states in part:

The car mile rate for current application is substantially less than current passenger car mile earnings and takes into account none of the increases in expenses which have taken place since the hearing.

The commission's apportionment of space, instead of assigning too much to the mail as charged by the department, assigns too little.

In ascertaining the cost of the mail service and in establishing rates therefor the commission has failed to take into account the transportation of postal officials, which amounts to $1,504,742, or equivalent to 0.6 cents per car mile.

The total estimated revenue resulting from the application of the rates fixed to the service performed falls materially short of that to which the commission found the carriers to be entitled.

Based on the commission's own statistical study, the reply of the carriers states, they are entitled to an aggregate annual revenue of $81,222,050. According to the calculations of the post office department, the total actually payable under the commission's order is $75,191,065 at the space rates fixed, to which approximately $1,500,000 should be added for side and terminal service, making a total of $76,691,065. On the basis of the department's own calculations, therefore, it is contended, the unit rates for application to the service prior to January 1, 1918, should have been 6 per cent higher than those named in the order.

6 Per Cent Return on Property Investment

The attorneys for the carriers also deny the contention of the post office department that the commission erred in its division of the property investment as between different classes or service or in the adoption of 6 per cent as the fair rate of return thereon. In answer to the criticism of the department as to the use of the property investment accounts

of the carriers as representing their approximate value, the reply of the carriers says:

"In answer to this it should be said that such property investment accounts were used by the department itself in its own calculations. While their use was accompanied with certain reservations by the department concerning the integrity of such accounts, no other basis of value was suggested nor is any other practically possible. The whole case was tried by both parties with the use of the property investment accounts as the only practicable standard of value.

"Reference is made in the petition to certain decisions of the commission in which the unverified character of the property investment account is discussed. No reference is made in the petition to the decisions of the commission in which attention is called to the fact that since 1907 capital charges have been made in strict accordance with the accounting rules of the commission, during which period approximately one-third of the total property investment account has been created. As an offset to any questionable items in the earlier accounts attention is called to the following considerations: (a) Failure to include in such account large sums charged to income account and to operating expenses and now chargeable under the accounting rules of the commission to capital account; (b) The enormous increase in land values which has taken place both since the original entries and those made since 1907, which under the decision of the Supreme Court in the Minnesota rate case must be included at present value; (c) Increase in construction costs since date of original entries; (d) Failure of property investment account to reflect any element of going value, which under the decision in Denver v. Denver Union Water Company, must be included; (e) Non-inclusion in property investment account of materials and supplies and working capital, which are as much a part of the property devoted to the public use as that reflected in the property investment account itself.

"There is little doubt but that, of the foregoing, the increased value of lands alone more than offsets, for the carriers as a whole, any questionable items in the property investment account prior to 1907. Taking all of the foregoing considerations into account the commission is fully justified in using the property investment account as the basis of its calculations, as it has done.

"In the foregoing list of items no mention has been made of the effect of applying present cost of labor and material to a reproduction estimate made either as of today or as of April, 1917, when war prices prevailed. It has been stated by Director Prouty that there has been an advance of not less than 75 per cent in these unit prices since the pre-war period. The extent to which such prices are abnormal for the future is problematical. They represent the prices of today. It is doubtful if any one believes that there will be a recession to the old level of prices for many years to come. Whatever may be said as to the normality or abnormality of such prices, they can no more be ignored in considering the present value of railroad property than in considering the present value of other property. If the value were to be estimated upon the basis of present prices it would far outrun the property investment of the carriers. In constructing rates for application in 1917, for the period between 1917 and 1920, and for 1920 and thereafter, the commission is fully justified in using the property investment account of the carriers, could not conceivably assign a less value to the railroads of the country as a whole and might, with propriety, have assigned more.

"The commission is further criticised for using 6 per cent as the proper rate of return on property investment in its calculations. No less percentage of return has ever been used by any court in confiscation cases. On the contrary, as pointed out in the brief of the carriers, percentages as high as 7 and 7½ per cent have been employed under the confiscation test.

"Reference is made to the provisions of the transportation act, 1920, in which the commission is directed to readjust revenues so as to yield as near as may be 5½ per cent on the value of the property and under which it may, within its discretion, add an additional one-half per cent to take care of additions and betterments to be paid for out of earnings. It is said that no proof was offered in justification of the additional allowance of one-half of one per cent. It should be a sufficient answer to say that the act in question had not then been passed and no such proof was required. If the matter is to be considered in the light of present day conditions it is self-evident that the higher of the two percentages should be allowed. If a return of less than 6 per cent on public utilities was confiscatory when the Consolidated Gas Company v. New York, was decided, as court held it was, it cannot be successfully contended that a less rate of return may be allowed today when the cost of money so far exceeds that then being paid. Speaking generally it is respectfully urged that the return to the carriers should always permit the making of some capital expenditures out of income as contemplated by the discretion vested in the commission for the inclusion of an additional one-half of one per cent for this purpose.

"The preservation of the credit of the carriers is all-important. In the railroad business, as in every other business, sound financing requires that some capital expenditures should be made out of earnings. The credit of no industry can be maintained if it is entirely dependent on borrowed capital for the making of improvements. The point is ultimately reached where the company's borrowings represent so disproportionate a part of its value as to destroy the necessary margin of safety for further financing. The carriers are now confronted with the necessity for unprecedented capital expenditures at a time when all credit is strained to the utmost, interest rates are the highest on record, and capital difficult to secure at any rate of interest. It is inconceivable that, at this critical juncture, the commission would fail to include the discretionary one-half of one per cent in the allowable income. While the commission's calculations were apparently based on an assumed 6 per cent, the estimated revenue accruing under the rates will not yield such rate of return. The post office department's estimate of the annual revenue prior to January 1, 1918, at the basic rates fixed by the commission is $75,191,065. Add to this $1,500,000 for side and terminal service and the estimated gross revenue becomes $76,691,065. From this figure should be deducted $59,719,850 of expenses, leaving a net revenue of $16,971,215, hich is but 4.9 per cent of the property investment apportioned by the commission to the mail."

In reply to the assertion of the post office department that the rate of return on the mail service will exceed that on the passenger and express services, the attorneys for the carriers say that if these services do not pay enough they should pay more and the fact that they do not is no reason why the mail should be less. The inference that revenues from all other classes of traffic should be reduced to the level of express, which the department says pays but 2½ per cent on the property investment, is declared to be manifestly unsound. If the mail revenue is to be reduced so as to yield but 2½ per cent because that is the rate of return yielded by the express traffic then it is said freight rates should be reduced so as to yield no more than the rate of return on the competitive mail and express business. The basis of rates which the department proposed to the commission was predicated on this theory and the rates fixed by the commission after careful consideration of the cost of the service and the property devoted thereto is said to be a complete refutation of the argument.

Moreover, it is asserted, the alleged disadvantage to the mail in favor of the express does not exist. The service per-

formed for the mail is both more onerous and of a different character from that performed by the express.

Competition Between Mail, Express and Freight

"It is a matter of common knowledge," the reply continues, "that prior to 1913 mailable merchandise packages were limited to 4 pounds; that the weight limit has since been increased to 70 pounds and that articles of every description and size, which could previously move only by freight or express, have since moved by mail. The consequent enormous increase in the volume of merchandise now moving by mail is likewise of common knowledge. These facts would appear to prove on their face a substantial invasion of freight and express traffic by the postal service. We are not complaining and have not complained of the parcels post. We did think and still think that with its continued invasion into what was hitherto express and freight traffic the rates should be put on a somewhat comparable weight basis and that we should not be required to rent space to a competitor to be filled up at his pleasure without regard to the revenue which would accrue from the same traffic if moving by express or freight. With its advantage thus preserved at space rates, which afford less pay for a given package of merchandise carried in the mail pile in a baggage car, than that which would be received if carried in the express pile, the department is in no position to suggest that it has been unfairly treated, or placed at a disadvantage as compared with the express, under the mail rates fixed by the commission."

The decision of the commission is declared to be not satisfactory to the railroads in the following particulars:

(a) In the preservation of the space basis.

(b) In that the space apportionment assigns too little space to the mail and consequently results in rates which are inadequate.

(c) In that the commission misconceived the attitude of the carriers towards the performance of side and terminal service. The carriers have never said that they did not object to performing this service. They have said they were not required to perform it. In not so finding the commission erred.

(d) In holding that land grant deductions apply to pay for distributing space.

(e) In the establishment of a rate for storage service which which does not properly take into account the heavy loading in such cars.

(f) In failing to make provision in the rate for the carriage of postal officers and employees in passenger coaches.

(g) In the inadequacy of revenue to the New England group at the rates fixed.

(h) In that, under the rules of administration provided, the space basis is still impracticable of equitable application. "The previous attitude of the carriers in this regard is confirmed by the apparent attempt of the department to circumvent the effect of the commission's decision by new administrative practices. In so far as these practices have been directed to the attention of the commission the commission has ruled that they are not in conflict with its order. Some others have since come to light. Granting them to be in harmony with the order as written, the administrative practices now being made effective will have the effect of reducing the total pay of the carriers far below that to which the opinion of the commission shows they are entitled without any possibility of saving to them in service or expense. We say with all due respect to the commission that under the rules named in the order as interpreted by the post office department, which interpretation the commission has said was not in conflict with the order, the space basis is as unworkable and as subject to unjust manipulation as it was before the commision took hold of the subject. It does not require a six months' trial to show that the administrative practices permissible under the commission's rules and being put in practice by wholesale by the department, will have the effect of reducing the pay of the carriers far below that which it has apparently been assumed by the commission will be yielded by the rates fixed, and will have no effect upon the actual service performed by the carriers, or admit of any substantial reduction therein or the expense thereof.

"Judged by its new administrative policy in revising authorizations since the commission's decision, the department has begun a campaign for wholesale reductions in pay without any corresponding reductions whatsoever in the service performed."

Commission on Car Service

The Commission on Car Service has issued a circular to the railroads saying that the period of maximum requirements for automobile loading is at hand and shortage of automobile cars, particularly during the past few weeks, has resulted in a large accumulation of shipments in producing territories. Automobile cars at present are badly scattered and railroads are asked to particularize with respect to this equipment.

Local loading of foreign automobile cars with miscellaneous freight, it is stated, should be avoided were practicable, and generally, until existing shortages have been relieved, railroads should refrain from furnishing this equipment for loading other than that for which automobile cars were constructed. Loading of foreign automobile cars with miscellaneous freight, where necessary, should be in direct route to owners or to automobile manufacturing territory but not beyond. Otherwise, and in the absence of automobile loading to owning line, cars should be sent empty to the car owner under car service rules.

Another circular says that information reaching the Bureau of Public Roads of the U. S. Department of Agriculture, from various state highway commissions, and from producers of materials used in road construction, indicates that there will be an extraordinarily heavy movement of these materials during the coming season. It is estimated that the roadbuilding this year will not be less than three times that of the heaviest previous season. The transportation demand will be accentuated by reason of the fact that much of the road construction will be in territory where stone, sand and gravel deposits are so located as to require abnormally long hauls.

"It seems to be apparent, from what has already been brought to our attention," the commission says, "that the handling of this business will require some co-operative action between individual railroads and the Commission on Car Service in order that maximum use of equipment and adequate service for this traffic may be secured. It is suggested, therefore, that individual carriers should, as promptly as possible, ascertain the demands that will be made upon them, and in the event that relief seems necessary, the Commission on Car Service should be promptly advised of all the facts so that the necessary steps may be taken looking to such readjustment of car movement as is possible in individual cases."

In order that the Commission on Car Service may assist in formulating some definite program for prompt home movement of bad order cars now held on various railroads, and which must be sent home for repairs or betterments under Section III Mechanical (MCB) rule No. 120, all railroads are asked to send to the commission a list of any such cars the handling of which via home route would entail a long and circuitous haul.

General News Department

Three hundred employees of the Car Record Office of the Pennsylvania Lines West of Pittsburgh, have been notified that about May 1 they will have to move from Pittsburgh to Philadelphia, as the car records now being kept at Pittsburgh are to be consolidated with those of other parts of the Pennsylvania System, and will all be kept at Philadelphia.

The Louisville & Nashville has installed radio telegraph apparatus in its general office at Louisville and proposes to provide facilities for radio communication with its division headquarters. Quick communication with the United States Weather Service, with a view to getting forecasts of gulf storms, is one of the objects had in mind in establishing this service.

President Wilson on March 12 issued a proclamation appointing Director General Hines as the agent provided for in Section 206 of the transportation act against whom shall be brought actions at law, suits in equity and proceedings in admiralty, based on causes of action arising from federal control, of such character as prior to federal control could have been brought against individual carriers.

Thefts of whiskey from freight cars which, under present conditions are in many cases looked upon as venial offences, do not always turn out that way; at Fredericton, N. B., last week, nine employees of the Canadian National Railways were called up in court for taking some Kentucky whiskey out of a car on the Transcontinental division of the road, and were sentenced each to six months in jail.

D. B. Hanna, president of the Canadian National, is preparing to lay before the Canadian Parliament an extensive program for increased efficiency and betterment of equipment of the Canadian National. Complete details will not be made public until the matter is laid before the Parliament at the coming session. Beyond stating that there would be no curtailment of last year's appropriations, Mr. Hanna has declined to make any further statement.

The third annual meeting and an election of officers of the Pacific Railway Club was held at Oakland, Cal., on March 11, at which the following officers were elected: President, Dennistoun Wood, assistant mechanical engineer of tests, Southern Pacific; first vice-president, J. H. Harris, general superintendent of the San Francisco-Oakland Terminal; second vice-president, S. S. Foote, Jr., professor of railroad engineering, University of California; treasurer, G. H. Baker, chief rate clerk, Atchison, Topeka & Santa Fe.

The Wisconsin Railroad Commission has been asked by the city attorney of Milwaukee, Wis., to express its views as to the correct method of instituting proceedings immediately to bring about the prosecution and going forward of outstanding orders abolishing railroad grade crossings in Milwaukee. The crossings were ordered eliminated, at a cost of approximately $5,000,000, by the commission just prior to government control. The work was about to have been begun when the government took control of the roads.

The town of Wellesley, Mass., has officially thanked the Boston & Albany Railroad for its good service during the adverse weather conditions of the past winter. At the annual town meeting on March 8, which was largely attended, John Eastman, chairman of the Board of Selectmen proposed, and the meeting unanimously adopted, a resolution to the effect that in view of the serious conditions which have existed during the winter and the extraordinary services rendered by the railroad to its patrons "the Board of Selectmen be instructed to communicate to the officials of the company, and through them to the operating force, the appreciation of the citizens for the extreme efforts put forth; * * * said resolution to be recorded in the books of the town."

The Salvation Army, with its numerous local headquarters all over the United States, keeps watch, at many large railroad stations, for inexperienced travelers, and especially young girls who may need assistance; and the officers of the army estimate that during the past year 50,000 girls have been thus aided, often in circumstances of considerable distress. In the last ten years, say the officers, the Army has helped 2,000,000 girls to travel safely on American railroads. Calling attention to this record, the Army proposes, in its campaign for money, from May 10 to May 20, to appeal to railroad men as well as other people.

A damage suit brought by a discharged employee of the Great Northern against that company, A. B. Ford, master mechanic and Director General Hines, was thrown out of court on March 2, by the judge of the Butte (Mont.) court. The plaintiff asked for damages in the sum of $21,049 for a violation of contract in dismissing him from railway service for disobedience of orders. The contention of the defendants was to the effect that the director general of the United States government could not be held responsible for any alleged violation of contract prior to January 3, 1918, the time of the dismissal of the claimant.

The American Railway Express Company contemplates the regular transportation of merchandise by airplane, according to a statement made by R. E. M. Cowie, a vice-president of the company, speaking before the National Aircraft Show in New York City last week. Mr. Cowie tells the aircraft manufacturers that when they provide the service the express company will do the advertising and the pick-up service and make deliveries at destination. He would not pretend to estimate what volume of traffic would seek the high speed made by airplane, but thought that of the million shipments carried daily by the express company, there must be at least a small percentage which would seek expedited service.

Daylight saving schemes are still in a confused state, though the day when most of them were to go into effect is only nine days off. In New York City it seems to be settled that clocks will be set to the sixtieth Meridian standard (one hour ahead) on the 28th; and the railroads, being obliged by the Federal law to continue running by the 75th Meridian, will probably issue new time tables, with the heavy suburban trains scheduled one hour earlier than they now run. The New York, New Haven & Hartford has already decided to do so, but other lines have not as yet taken any action. The city of Philadelphia, which adopted a daylight saving ordinance sometime ago, with the intention of putting it into effect on March 28, finds that the act is illegal, being in conflict with a state law, in effect since 1887, which prescribes Eastern standard time for the whole state. Boston and Providence seem not as yet to have learned their own mind.

How Much Coal Can Be Saved by Electrification

The editorial with the above title which appeared on page 754 of the March 12, 1920, issue of the *Railway Age* contained typographical errors which made it difficult to understand. The second paragraph should have read as follows:

Ton-mile cost is the unit on which the railroad operator bases most of his calculations. Mr. Armstrong says freight can be hauled with a power consumption of 40 watts per gross ton-mile and that one kw.-hr. of electrical energy can be produced in a power house from 2½ lb. of coal. Then, pounds of coal per 1,000 gross ton-miles =

$$\frac{40 \times 1{,}000 \times 2\frac{1}{2}}{1{,}000} = 100.$$

Disastrous Collision at Bellows Falls

In a butting collision on the Rutland Railroad near Bellows Falls, Vt., on the 14th of March, between a northbound express and a southbound freight, four passengers and six trainmen were killed, and a number of persons were injured. Both engines, ten freight cars, two milk cars and a baggage car were wrecked.

25 Per Cent Rate Increase Predicted

Walker D. Hines, director general of railroads; Max Thelen, director of the Division of Liquidation Claims of the Railroad Administration, and C. A. Prouty, formerly director of the Bureau of Valuation of the Interstate Commerce Commission and now director of the Division of Accounting of the Railroad Administration, were the guests at a dinner of the University Club at Washington, D. C., on March 10, and gave addresses regarding the work of the Railroad Administration. Mr. Hines declared that greater increases in rates will be necessary under private operation of the railroads than under government operation. Judge Prouty expressed the opinion that a 25 per cent increase will probably be necessary for the railroads, whereas a 10 per cent increase would have been sufficient under government operation.

Coal Commission Submits Divided Report

The commission appointed by the President to investigate the question of wages of bituminous coal miners has failed to reach an agreement. Commissioners Henry M. Robinson, representing the public, and Rembrandt Peale, representing the operators, have submitted a report recommending a general wage increase of 25 to 26 per cent, including the 14 per cent already allowed, without change in hours or working conditions, and John P. White, representing the miners, has submitted a minority report recommending, it is reported, a 35 per cent increase in wages and a seven-hour day. The President asked the commissioners to confer with him before making any announcement. It is understood that the commission has attempted to devise a plan to induce railroads and other large consumers of coal to purchase and store the larger part of their coal supply during the dull season in order to even up the production during the year and to meet the problems of unemployment and congestion and shortage of transportation facilities which result from seasonal increases in production.

Wage Conference to Be Resumed

Conferences between the committee representing the railroads and the committee representing the railroad labor organizations that are transferring their general wage demands from the Railroad Administration to the railroad companies are expected to be resumed in Washington on March 22. An adjournment was taken after the first meeting on March 10 to enable the committees to obtain further information as to the extent of their authority and on other matters before proceeding further. At a meeting of the standing committee of the Association of Railway Executives in New York on March 11 the committee representing the railroads in the wage conference was enlarged by the appointment of C. H. Stein, of the Central of New Jersey; J. H. Dyers, of the Southern Pacific; E. C. Wills, of the Missouri Pacific; W. M. Jeffers, of the Union Pacific; J. H. Foster, of the Chicago, Milwaukee & St. Paul; J. R. Gould, of the Chesapeake & Ohio; G. R. Loyall, of the Southern, and B. M. Starks of the Louisville & Nashville. E. T. Whiter of the Pennsylvania was appointed chairman in place of C. B. Lardo, who retired from the committee on account of pressure of other work.

Plumb Plan League Has a Research Bureau

The Plumb Plan League has announced the establishment at its Washington office of a Research Bureau under the direction of O. S. Beyer, Jr. One of the important functions of the bureau will be the keeping of accurate records of all members of Congress for the benefit of their constituents. The speeches, attitudes and votes of Senators and Representatives will be carefully indexed and recorded so that a complete digest of the record of any member of Congress may be secured on short notice. From time to time the bureau will publish special pamphlets, documents, booklets, studies, periodicals and investigations on matters requiring particular illumination. These publications will deal, for instance, it is said, specifically with such subjects as the following: industrial democracy and the railroads; evidence of organized workers' ability to help manage industries under democratic control; economies accomplished in railway operation during Federal control; the co-operative movement and the railway worker; the cost of living and the wages of railway employees; a digest of the new railroad law; the wastes of private railroad ownership and operation. When legislation is pending, or when railroad rate and wage questions are under consideration, the Research Bureau will endeavor to be of help in compiling statistics, arguments and data "for the purpose of proving the justice and soundness of labor's contentions."

Storekeepers' Annual Meeting

Section VI American Railroad Association—Department of Purchases and Stores—will hold its first annual meeting at Atlantic City, N. J., on June 14, 15 and 16. Headquarters will be at the Marlborough-Blenheim Hotel and business sessions will be held in the Hippodrome on the Million Dollar Pier.

Members and all persons attending are asked to reach Atlantic City by Saturday, June 12, if possible, in order to see the exhibits and not be obliged to take time from business sessions for that purpose. Badges must be secured, on arrival, from the committee at the pier.

Seventeen subjects are on the program for discussion, as follows, the name of the chairman of the committee in charge being given with each subject:

1. Store department book of rules; J. G. Stuart (C. B. & Q.).
2. Classification of material; C. H. Rost (C. R. I. & P.).
3. Reclamation of material.
4. Material accounting; W. E. Brady (A. T. & S. F.).
5. Commissary; G. C. Smith (U. P.).
6. Cross ties; J. H. Waterman (C. B. & Q.).
7. Stationery; W. D. Stokes, supervisor of stores, United States Railroad Administration, Southern Region.
8. Distribution of material to users; W. D. Stokes.
9. Fuel—purchasing, storage and distribution; S. B. Wight (N. Y. C.).
10. Scrap; handling and sales; G. W. Hayden (N. Y. N. H. & H.).
11. Ice—purchasing, storage and distribution; T. J. Frier (Wabash).
12. Purchasing agent's office records; C. E. Walsh (P. W. P.).
13. Lumber; Wm. Beatty (P. R. R.).
14. Rails; A. A. Goodchild (C. P. R.).
15. Buildings and structures; U. K. Hall, associate manager, stores section, United States Railroad Administration.
16. Supply train operation; A. S. McKelligon (S. P.).
17. Standards; F. D. Reed (C. R. I. & P.).

The chairman of section VI is H. C. Pearce (S.A.L.), Norfolk, Va.; secretary, J. P. Murphy (N.Y.C.), Collinwood, Ohio.

St. Paul Opens New Electrified Section

The electrification of the Coast division of the St. Paul has just been completed in final details. It adds 207.4 miles to the 440 miles previously electrified in Montana on the Rocky Mountain and Missoula divisions, making a total of 647.4 miles of the St. Paul line now operated electrically. The operation of trains by electricity on the Coast division was formally started on March 5. This division extends from Othello, in central Washington, to the shops in Tacoma on the Puget sound end. The Rocky Mountain electrification extends from Harlowton, Mont., on the east, to Avery, Idaho, on the west. Between Avery and Othello is a stretch of 212 miles yet to be electrified.

All of the electric current used in the operation of the trains is generated from water power. The power furnished to the western electrified section is taken from the Snoqualmie plant of the Puget Sound Traction, Light & Power Company at the west end near Seattle, and from the Long Lake plant of the Washington Water Power Company on the Spokane river. Current is delivered to the railroad transmission lines along its right of way at 100,000 volts. There are eight sub-stations between Othello and Tacoma, which step the high tension alternating current down to 3,000 volts direct current for the overhead catenary system. Fifteen new electric locomotives for passenger train service have been added to the equipment of the electrified sections. Five of these, which are of the bi-polar, gearless type, were built by the General Electric Company. A description of them was published in the *Railway Age* of October 24, 1919 (page 819.) The remainder are Baldwin-Westinghouse electric locomotives, which were described in the *Railway Age* of Janu-

ary 16, 1920 (page 233). The gearless type of locomotive will be used in passenger service on the western electrified section. They are designed to haul a train consisting of 12 coaches up a 2.2 per cent grade without a helper at a speed of 25 miles an hour.

Railway Revenues and Expenses for January

The Interstate Commerce Commission's monthly summary of railroad returns for January, covering 189 Class I roads and 15 switching and terminal companies, shows gross receipts of $500,860,649 and net operating income of $68,401,109. The details appear in the table:

REVENUES, CLASS I RAILROADS, JANUARY, 1920

		Amount		Per mile of road operated	
		1920	1919	1920	1919
1.	Average number miles operated	235,039.61	234,656.22	.....	.....
REVENUES:		Dollars	Dollars	Dolls.	Dolls.
2.	Freight	312,020,723	278,375,866	1,328	1,186
3.	Passenger	91,886,422	87,055,662	391	371
4.	Mail*	60,041,439	4,353,090	255	19
5.	Express	13,915,942	6,349,831	59	27
6.	All other transportation	10,958,122	9,382,983	47	40
7.	Incidental	11,551,264	11,296,023	49	48
8.	Joint facility—Cr.	713,969	581,288	3	3
9.	Joint facility—Dr.	227,232	163,233	1	1
10.	Railway operating revenues*	500,860,649	397,231,510	2,131	1,693
EXPENSES:					
11.	Maintenance of way and structures	57,903,492	58,453,440	246	249
12.	Maintenance of equipment	117,613,057	99,692,016	500	425
13.	Traffic	4,912,908	3,499,458	21	15
14.	Transportation	219,135,677	186,055,639	932	793
15.	Miscellaneous operations	4,386,327	3,597,839	19	15
16.	General	11,174,207	10,247,055	48	44
17.	Transportation for investment—Cr.	336,686	400,782	1	2
18.	Railway operating expenses	414,788,982	361,144,665	1,765	1,539
19.	Net revenue from railway operations*	86,071,667	36,086,845	366	154
20.	Railway tax accruals (excluding "War Taxes")	17,556,667	15,415,549	75	66
21.	Uncollectible railway revenues	113,891	58,095	....	....
22.	Railway operating income*	68,401,109	20,613,201	291	88
23.	Equipment rents (Dr. Bal.)	2,446,091	835,787	10	3
24.	Joint facility rent (Dr. Bal.)	1,807,471	1,335,312	8	6
25.	Net of items 22, 23 and 24*	64,147,547	18,442,102	273	79
26.	Per cent of expenses	82.82	90.92	....	....

§Credit item.

NOTE.—The average railway operating income corresponding to item 22 above for the month of January in the years 1915, 1916 and 1917, included in the "test" period of three years ended June 30, 1917, was $254 per mile of line for the United States.

*The figures for these items are affected by the inclusion of approximately $50,000,000, representing an estimate of back railway mail pay.

Short Lines to Meet

Several hundred officers of short line railroads from all parts of the United States will attend a special meeting called by Bird M. Robinson, president of the American Short Line Railroad Association, to be held at the New Willard Hotel on April 15 and 16, for the purpose of discussing the relation of the short lines to the new transportation act which became a law by the signature of the President on February 28. The act contains many provisions which vitally affect the short lines, including those for the establishment of rates which will produce a net return of 5½ per cent for the carriers as a whole or by groups, for the determination of divisions of joint rates as between carriers, for a guaranty against deficits incurred by railroads that were not under federal control, for a six months' guaranty to roads that accept the guaranty provisions of the act, for loans to carriers out of a $300,000,000 fund appropriated for that purpose, and for a plan of permissive consolidation of railroads into a limited number of competitive systems.

Edgar E. Clark, chairman of the Interstate Commerce Commission, will be the principal speaker at the meeting and addresses will also be made by Chairman Albert B. Cummins, of the Senate committee on interstate commerce, Senator Joe T. Robinson of Arkansas, and Chairman John J. Esch of the House committee on interstate and foreign commerce.

The Merchants' Limited

The Merchants' Limited express train of the New York, New Haven & Hartford, leaving New York and Boston at 5 p. m. and making the run in either direction in five hours ten minutes, is now made up of ten cars, so arranged that passengers desiring to reach either the dining car or the smoking car can do so with the minimum of travel; and the make-up of the train affords an unusual variety of accommodations. An officer of the road, describing this new arrangement, says:

"This train is heavily patronized by business men. It consists entirely of Pullman cars. The make-up of the train prior to the war was on the basis of a combination baggage and parlor car ahead, three parlor cars, one of which had a drawing room; two diners, three parlor cars, and an observation car, which also had a drawing room. The observation car was an open car available for the use of everybody in the train and smoking was permitted. It also contained two sections which were in constant demand by passengers desiring to enjoy a game of cards en route. Usually the car was filled, while at the same time the seats which were reserved for these men in the forward cars were empty.

"During the war all of the seats in this observation car were sold; smoking was allowed in the observation car and also in one parlor car. With that arrangement, however, a passenger, if he wished to smoke, had to obtain his reservation in one or the other of these two cars, and all of the other passengers—for instance, a man traveling with his wife—were deprived of any opportunity to enjoy an occasional smoke—except by going into the wash room or to the vestibule platform, or crowding into one of the two rear cars in which smoking was allowed but where the space was all reserved. Moreover, a passenger whose reservation was in one of the forward cars of the train could reach the smoker only by walking the entire length of the train and through the two dining cars.

"Under the new make-up the forward car contains the compartment for baggage, two sections which are reserved and sold in preference for parties of four who desire to play cards, about 25 or 30 club-car chairs which are reserved and sold for those who wish to travel in a car where smoking is permitted; and about 15 chairs that are not reserved. These last are available for the occasional smokers from the three parlor cars following. Two of these three parlor cars have drawing rooms. The two dining cars being in the middle of the train, passengers can reach them without traveling long distances. The three cars following the diners are standard parlor cars. The rear car is divided. The forward portion has 28 club-car seats where smoking is allowed, which are reserved. The rear portion has two sections which are also reserved and sold in preference for card parties of four. The remaining 16 chairs are not reserved and are available for the occasional smokers from the three parlor cars ahead. The club cars at the forward and the rear ends of the train both have small buffets from which cigars, cigarettes and soft drinks are served.

"The train is substantially a double-ender; that is, the forward half and the rear half are duplicates of each other. A passenger may select pretty nearly anything he wants: drawing rooms, regular parlor car accommodations, club car accommodations, sections for card playing, and a number of unreserved seats in both the forward and rear ends for the convenience of those traveling with ladies, or others, who wish to enjoy an occasional smoke. The train usually carries from 260 to 290 passengers."

MUST PAY THEIR WAY.—Inasmuch as in two years of government operation the taxpayers have paid $700,000,000 in deficits, the increase will undoubtedly be necessary. When the railroad are returned the economies which the government has instituted should and doubtless will be retained; but the economies private operation may introduce, mostly in the line of increased efficiency, will not be great. They certainly will not be sufficient to save $1,000,000 a day. But this will be accomplished because it must be; the railroads will be given enough revenue to pay their way. The people who ride on the railroads and ship by the railroads will pay the expenses of the railroads. They should pay these expenses. The general public should not be called upon to pay, in taxes, for maintenance of the national transportation system.—*Syracuse (N. Y.) Post-Standard.*

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JANUARY, 1920

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of									
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.			
Alabama & Vicksburg	141	$162,994	$70,488	$296,302	$40,919	$48,225	$3,993	$105,940	$9,897	$212,164	71.61	$84,139	$12,319	$71,759	$52,015
Alabama Great Southern	312	579,043	175,047	919,017	105,637	203,473	21,090	283,936	20,414	640 889	69.73	278,129	22,136	255,955	95,585
Ann Arbor	301	340,193	53,614	455,984	39,522	86,746	5,474	216,579	11,400	359,720	78.88	96,264	16,700	79,552	36,918
Arizona Eastern	377	273,641	52,761	369,868	48,330	50,499	5.994	114,195	16,003	237,314	64.16	132,554	17,151	115,303	8,159
Atchison, Topeka & Santa Fe	8,662	11,791,631	4,424,039	20,177,970	1,678,004	4,094,190	181,825	5,826,925	261,244	12,015,529	59.54	8,162,441	689,498	7,470,548	5,732,285
Atlanta & West Point	93	126,603	86,758	277,527	41,170	36,572	5.570	101,796	7,544	197,186	71.05	80,341	7,450	72,890	29,333
Atlanta, Birmingham & Atlantic	639	335.676	72,343	523,804	87,736	146.293	13,804	221,814	12.504	482,275	92.07	41,529	16,000	25,314	170,334
Atlantic City	177	112,011	118,160	260,865	40,970	25,824	954	182,347	823	251,027	96.22	9,838	11,603	—1,770	—38,940
Atlantic Coast Line	4,886	4,289,414	1,397,925	6,820,140	821,232	1,256,243	90.529	2,803,746	132,123	5,154,451	75.57	1,665,689	200,000	1,464,785	142,720
Baltimore & Ohio Chicago Terminal	90	.....	.....	214,879	13,405	36,247	1,258	163,652	8,022	226,639	105,47	—11,760	26,542	—38,303	120,701
Baltimore & Ohio	5,151	12,341,182	2,098,762	17,343,668	1,548,788	5,275,709	192,902	8,373,720	387,873	15,879,089	91.55	1,464,579	476,397	979,260	2,566,544
Baltimore, Ches. & Atlantic	87	30,980	12.223	60,009	8,676	33,133	898	52,501	3,579	98,787	164.62	—38,778	3,700	—42,478	39,453
Bangor & Aroostook	632	417,614	79,899	591,175	69,154	143,859	3,405	210,608	11,755	445,293	75.32	145,883	24,599	121,284	89,173
Beaumont Sour Lake & Western	118	101,284	28,689	142,937	46,389	21.585	2,146	50,753	4,481	125,344	87.69	17,593	2,350	15,239	—3,505
Belt R. R. of Chicago	31	.....	.....	419,787	32,925	69,144	314	263,733	7.577	373,693	89.01	46,094	15,682	30,411	80,039
Bessemer & Lake Erie	217	555,020	34,742	639,349	65,242	327.431	10,968	296,190	25,933	731,773	114.45	—92,424	13,900	—106,337	—40,998
Bingham & Garfield	36	147,229	1,845	152,151	33,418	39,912	1,588	38,244	3,165	119,125	78.29	33,026	7,425	25,601	16,880
Birmingham Southern	26	23,885	.....	35,148	4,250	6,302	899	24,990	3,303	39,744	113.07	—4,596	1,754	—6,360	—27,769
Boston & Maine	2,258	4,102,181	1,631,876	6,778,276	623,231	1,575,772	50,963	3,916,462	192,250	6,368,579	93.95	409,697	214,036	192,436	345,207
Brooklyn Eastern District Terminal	10	84,079	.....	92,029	35,457	48,424	.....	59,817	3,761	147,459	160.23	—55,431	5,943	—61,374	—8,475
Buffalo & Susquehanna	296	210,405	6,914	226,498	29,206	108,136	2,865	91,140	7,968	239,314	105.66	—12,815	3,350	—16,165	2,627
Buffalo, Rochester & Pittsburgh	589	1,110,536	128,184	1,322,703	193,826	504.118	13,202	679,715	31,724	1,425,019	107.74	—102,316	25,000	—127,950	—47,849
Canadian Pacific Lines in Maine	233	279,806	65,956	357,395	26,975	75,521	2,877	258,950	3,680	368,004	102.96	—10,609	12,200	—22,809	41,587
Carolina Clinchfield & Ohio	282	551,472	32,278	616,786	80,426	197.146	4,460	190,205	14,980	486,963	78.95	129,823	13,500	116,282	18,491
Central New England	301	471,631	24,665	531,711	110,447	199,849	2,779	333,323	15,389	661,909	124.48	—130,198	17,800	—148,002	—117,788
Central of Georgia	1,918	1,296,970	539,050	2,411,343	360,798	429,572	51,597	895,826	63,824	1,808,202	74.98	603,140	70,223	532,786	529,522
Central Vermont	411	343,651	89,234	536,502	54,004	134,800	11,750	363,708	17,890	584,674	108.97	—48,173	—17,400	—65,589	27,064
Charleston & Western Carolina	342	211,886	54,652	278,921	58,062	86.181	571	141,022	262	286,097	102.57	—7,176	8,500	—15,676	—22,731
Chesapeake & Ohio	2,516	4,816,260	767,321	6,420,510	697,485	1,741,611	40,848	2,706,013	114,422	5,331,962	83.04	1,088,548	189,810	898,405	—17,042
Chicago & Alton	1,950	1,526,661	471,563	2,541,179	230,961	720,636	23,686	1,138,904	50,656	2,177,539	85.69	363,641	59,270	304,102	185,722
Chicago & Eastern Illinois	1,131	1,710,974	416,568	2,932,418	241,270	760.595	18,210	1,032,340	48,427	2,110,442	91.96	821,976	85,000	736,866	803,515
Chicago & Erie	269	752,189	60,738	998,352	66,081	175.249	13,866	573,534	26,842	858,652	86.00	139,699	35,000	104,640	27,414
Chicago & Northwestern	8,090	7,567,844	2,774,912	13,093,062	1,485,109	3,007,466	84,200	6,726,877	273,783	11,674,776	89.16	1,418,286	578,443	838,549	758,040
Chicago, Burlington & Quincy	9,371	10,076,088	2,708,816	16,570,348	1,189,627	2,847,866	90,399	6,301,552	337,673	10.898,246	65.76	5,672 102	545,361	5,124,227	3,202.261
Chicago Great Western	1,496	1,320,195	474,295	2,257,561	222,729	488,949	28,247	1,014,002	51,612	1,820,215	80.62	437,346	54,866	382,555	338,599
Chicago, Indianapolis & Louisville	654	799,898	224,159	1,312,817	120,747	342,868	20,843	502,841	27,449	1,027,493	78.26	285,324	47,477	237.826	173,775
Chicago Junction	12	.....	.....	348,065	36,923	54.362	323	293,018	6,536	391,161	112.38	—43,097	2,876	—45,973	61,179
Chicago, Milwaukee & St. Paul	10,628	8,794,030	2,267,079	14,533,591	1,629,568	3,337,190	94,806	6,933,011	373,130	12,441,383	85.60	2,092,208	480,240	1,590,363	2,127,905
Chicago, Peoria & St. Louis	247	148,514	25,859	201,953	31,791	79,072	1.238	95.269	2,420	209.762	103.86	—7,809	6,100	—13,909	53.851
Chicago, Rock Island & Gulf	463	428,117	111,625	661,043	88,001	107,032	7,337	212,308	12,407	428,045	64.75	232,998	14,017	218,903	237,477
Chicago, Rock Island & Pacific	7,595	7,166,629	2,532,999	12,344,566	1,736,307	2,371,613	110,312	5,097,074	209,391	9,535,259	51.97	2,809,308	382,032	2,426,348	2,724.263
Chicago, St. Paul, Minn. & Omaha	1,749	1,725,710	647,966	2,910,425	226,409	434,391	18,342	1,296,288	64,077	2,054,078	70.58	856,347	121,976	734,050	374.247
Chicago, Terre Haute & St. Eastern	374	388,999	22,651	437,160	40,294	131,784	3,670	208 388	9,764	396,089	90.61	41,072	18.000	23,072	63,071
Cincinnati, Lebanon & Northern	76	50,476	7,882	76,576	13,732	27,259	1,534	60,848	932	104,306	136.21	—27,729	6,486	—34,218	27,443
Cinc., Indianapolis & Western	321	232,759	49,314	376,156	47,534	123,812	5,857	172,256	14,719	365,122	97.06	11,034	11,010	18	75,708
Cinc., New Orleans & Texas Pacific	337	1,104,986	335,280	1,756,312	182,796	353,285	37,106	651,944	37,063	1,278,694	72.80	477.618	34,000	443,459	43,710
Cincinnati Northern	251	163,377	20.188	224,918	22,509	57,742	2,534	106,234	3,883	192,881	85.75	32,037	9,615	22,422	—9,423
Cleveland, Cincinnati, Chic. & St. Louis	2,408	4,421,736	1,341,211	7,377,259	496,253	1,479,839	88,571	2,990,658	116,187	5,227,343	70.85	2,149,917	150,308	1,998,541	1,445.138
Colorado & Southern	1,099	806,316	192,006	1,222,633	110.041	270,953	8,527	447,262	32,372	876,115	71.65	346,518	50,989	295,017	78,450
Colorado & Wyoming	43	11,425	671	47,877	7,569	12,448	326	24,367	3,842	48.553	99.33	323	5,000	—4,677	—17,485
Cumberland Valley	163	335,219	74,697	483,149	50,958	115,551	9,000	177,644	11,974	365,791	75.70	117,359	5,541	111,818	38,444
Delaware & Hudson	875	2,365,822	227,514	2,771,965	310,474	931,352	16,482	1,536,185	109,674	2,930,192	105.70	—158.227	78,000	—236.282	—94,778
Delaware, Lackawanna & Western	956	4,244,540	941,593	5,892,885	510 512	1,439,328	64,746	3,078,451	119,083	5,276,178	89.53	616,706	287,500	328.205	—650,070
Denver & Rio Grande	2,585	2,456,067	518,467	3,420,842	248,997	719.558	248,997	719,558	20.615	1,137,961	33.27	71,812	2,238,426	1,067,114	652,169
Denver & Salt Lake	255	210,982	26,864	245,671	74,194	125,901	969	153,352	5.506	359,922	146.50	—114,251	10,583	—124,837	1,088
Detroit & Mackinac	376	69,223	37,618	118,313	26,341	40.553	2,642	77,330	6,936	153,773	129.97	—35,461	7,734	—43,194	15,172
Detroit & Toledo Shore Line	61	186,452	.....	186,360	12,669	23,023	1,548	79.875	5,555	122,670	65.82	63,690	7,900	55,659	—51,944
Detroit, Toledo & Ironton	454	322,194	12,892	351,381	58,480	83,779	3,367	237,055	13.660	396,381	112.80	—45,000	9,041	—54,299	—2,521
Duluth & Iron Range	292	72,328	23,748	127,723	51,225	98,094	427	132,297	11,960	294,737	230.76	—167,014	6,307	—173,383	3,080
Duluth, Missabe & Northern	407	61,490	41,966	144,692	102,826	173,147	2,076	182,931	16.571	479,177	331.17	—334.486	8,582	—343,067	—65,224
Duluth, South Shore & Atlantic	614	209,200	102,451	467,767	67,664	111,499	5,698	299,473	10,911	502,159	107.35	—34.392	20,500	—54,947	—31,428
Duluth, Winnipeg & Pacific	178	150,424	30,669	184,455	17,511	38,625	1,971	93,181	7,977	159,265	86.34	25,189	10,128	15,061	—4,963
East St. Louis Connecting	3	.....	.....	115,385	11,594	43,913	286	95,708	3.454	154,956	134.29	—39,571	2,000	—41,571	11,481
El Paso & Southwestern	1,027	918,089	237,908	1,350,835	216,133	234,578	9,756	324,258	28,160	822,721	60.90	528,114	60,415	467,583	168,692
Elgin, Joliet & Eastern	832	1,448,492	1	1,740,539	127,216	443,612	6,644	749,502	26,581	1,353,551	77.76	386,988	51,839	335,149	—158,825
Erie	1,989	5,917,668	962,248	8,193,917	880,760	2,813,615	70,668	4,433,176	218.612	8,473,756	103.42	—279,839	282,750	—575,300	104,302
Florida East Coast	764	633,238	443,479	1,189,954	121,844	171,615	12,432	430,747	21,929	768,828	64.60	421,126	39,184	381,839	223,542
Fonda, Johnstown & Gloversville	88	30,298	72,590	108,522	11,536	9,736	414	42,184	5.472	69,343	63.89	39,178	4,900	34,279	9,008

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JANUARY, 1920—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Ft. Smith Western	253	$112,850	$32,033	$154,496	$34,492	$36,146	$4,146	$69,969	$6,589	$152,817	98.91	$1,617	$5,000	—$3,394	—$9,327
Ft. Worth & Denver City	454	627,218	331,853	1,101,038	124,187	212,881	4,917	444,840	29,315	819,384	74.41	281,653	21,900	259,454	115,629
Ft. Worth & Rio Grande	235	98,769	66,313	185,532	36,809	25,126	2,318	88,213	6,934	159,399	85.91	26,133	3,785	22,349	48,924
Galveston, Harrisburg & San Antonio	1,381	1,407,454	442,986	2,125,560	301,264	447,384	24,211	780,089	42,754	1,625,470	76.47	500,090	61,324	436,937	67,478
Galveston Wharf	13	.....	.....	88,287	27,032	1,759	168	44,106	1,354	86,983	98.52	1,304	12,200	—10,896	—22,811
Georgia	328	299,761	141,966	484,604	70,277	129,011	7,204	298,048	14,314	519,088	107.11	—34,484	5,950	—40,442	—172,279
Georgia & Florida	405	62,412	22,722	114,133	61,291	21,968	2,357	78,765	6,535	170,917	149.75	—56,784	6,000	—62,784	—42,516
Georgia Southern & Florida	402	263,100	183,816	561,919	73,809	105,594	9,262	222,024	12,915	428,123	76.18	133,795	17,500	115,357	72,918
Grand Rapids & Indiana	569	480,159	156,452	835,112	69,577	191,811	9,436	402,382	22,140	696,057	83.34	139,056	40,111	98,939	194,732
Grand Trunk Western	1,021	1,380,709	280,088	1,842,010	196,290	528,812	27,753	1,130,772	63,730	1,952,544	106.00	—110,534	52,803	—163,444	—255,149
Grand Trunk Lines in New England	172	266,021	29,310	343,166	62,938	52,973	2,635	173,625	19,198	336,828	98.15	6,338	12,699	—6,362	143,229
Great Northern	8,176	5,528,374	1,431,797	10,151,936	1,360,158	2,001,372	54,612	4,237,960	156,196	7,903,964	77.95	2,247,972	646,617	1,600,410	663,703
Gulf & Ship Island	307	179,047	44,096	273,119	64,413	52,242	7,131	102,338	9,739	236,319	86.52	36,801	11,861	24,903	41,388
Gulf, Colorado & Santa Fe	1,937	1,617,551	540,381	2,591,020	409,938	401,949	20,468	910,320	56,977	1,785,317	68.90	805,702	85,918	719,680	505,864
Gulf, Mobile & Northern	467	201,738	54,908	327,688	80,888	66,706	6,328	133,691	9,643	297,254	90.71	30,434	11,736	18,333	34,317
Hocking Valley	350	970,918	98,255	1,164,606	107,360	362,986	8,311	457,869	25,704	962,212	82.62	202,394	57,622	144,772	431,626
Houston & Texas Central	847	658,882	228,233	1,073,262	162,354	178,682	6,559	373,271	23,695	744,561	69.37	333,700	37,685	295,449	218,494
Houston, East & West Texas	190	131,220	46,759	217,179	44,708	39,943	2,976	98,500	6,749	192,875	88.80	24,303	7,570	16,234	—37,627
Illinois Central	4,800	7,790,181	2,135,428	12,255,892	1,669,533	2,776,269	79,114	4,667,352	229,106	9,507,261	77.57	2,748,631	503,670	2,243,036	2,365,470
Indiana Harbor Belt	120	.....	.....	654,496	127,854	127,410	1,935	519,528	17,208	793,935	121.30	—139,439	10,101	—149,543	—181,130
International & Great Northern	1,159	1,113,348	285,841	1,728,576	295,578	374,875	15,412	667,399	43,555	1,405,418	81.30	323,158	32,500	290,303	297,322
Kanawha & Michigan	176	282,158	47,842	339,985	53,513	153,784	2,876	144,715	13,557	368,445	108.37	—28,460	25,000	—53,461	55,471
Kansas City, Mexico & Orient	272	107,532	19,453	149,575	40,996	51,695	2,073	86,994	8,294	190,051	127.06	—40,476	7,715	—48,224	43,973
Kansas City, Mexico & Orient of Texas	465	99,440	26,465	159,499	37,058	54,716	1,431	81,367	9,052	183,623	115.12	—24,124	6,250	—30,475	54,382
Kansas City Southern	774	983,026	238,688	1,498,996	179,717	318,649	33,941	549,781	43,477	1,124,771	75.03	374,225	54,570	319,478	205,948
Kansas City Terminal	27	.....	.....	126,819	18,718	34,953	.....	79,734	1,866	138,807	109.40	—11,988	34,271	—46,259	—26,182
Lake Erie & Western	902	746,010	61,201	933,496	79,948	267,311	16,265	419,807	23,776	807,107	86.46	126,390	51,001	75,359	140,608
Lake Superior & Ishpening	34	5,932	271	7,418	19,267	17,329	171	10,528	2,297	49,592	668.53	—42,174	3,872	—46,046	—6,076
Lake Terminal	12	.....	87,006	89,792	14,759	19,517	.....	65,562	35	99,802	111.14	—10,010	5,767	—15,777	—26,678
Lehigh & Hudson River	96	181,037	3,763	197,500	25,001	48,635	2,033	106,449	6,233	188,351	95.36	9,149	8,562	586	1,053
Lehigh & New England	232	349,751	1,833	368,360	30,725	86,445	10,068	128,885	9,204	265,103	71.97	103,257	10,860	92,397	25,276
Lehigh Valley	1,435	4,320,458	503,254	5,487,477	759,992	1,729,318	39,384	3,075,012	101,587	5,725,639	104.34	—238,162	176,000	—414,790	—544,507
Long Island	398	524,721	889,303	1,656,572	226,779	374,733	13,309	1,100,455	50,801	1,779,208	107.40	—122,636	104,059	—226,748	—25,301
Los Angeles & Salt Lake	1,168	914,980	451,533	1,631,856	150,944	317,059	19,491	581,790	31,219	1,146,480	70.25	485,376	79,016	406,308	117,235
Louisiana & Arkansas	302	234,401	51,630	318,052	38,718	46,455	4,592	104,605	6,488	200,858	63.15	117,194	12,843	104,349	112,675
Louisiana Western	207	307,276	119,849	480,676	68,168	77,242	4,656	100,733	11,348	264,460	55.02	216,215	19,795	196,388	93,654
Louisville & Nashville	5,040	6,496,964	1,945,353	10,269,715	1,446,264	2,579,036	176,899	4,347,591	208,690	8,812,907	85.81	1,456,808	250,141	1,206,012	704,875
Louisville, Henderson & St. Louis	199	151,189	57,433	251,342	34,841	37,381	4,208	99,051	8,127	183,609	73.05	67,733	5,000	62,730	16,029
Maine Central	1,216	1,033,658	324,880	1,604,346	193,906	384,633	10,275	920,471	39,869	1,549,158	96.55	55,188	82,742	—27,682	156,902
Maryland, Delaware & Virginia	82	26,116	11,136	45,255	7,164	25,997	352	48,282	2,115	83,909	185.41	—38,654	2,000	—40,654	38,686
Michigan Central	1,862	4,394,727	1,264,394	6,979,258	662,213	1,559,517	79,163	3,085,175	122,512	5,613,704	80.43	1,365,554	250,000	1,115,055	—28,906
Midland Valley	388	248,784	97,294	385,988	75,076	67,190	3,748	166,938	13,600	326,551	84.60	59,436	7,183	52,067	24,658
Mineral Range	101	55,374	340	56,810	15,377	22,892	319	34,923	968	74,479	131.10	—17,668	3,600	—21,268	—31,478
Minneapolis & St. Louis	1,646	990,138	228,085	1,502,750	116,184	332,615	11,126	691,300	29,874	1,181,238	78.61	321,512	56,194	265,254	499,615
Minneapolis, St. Paul & Sault Ste Marie	4,243	2,465,657	634,815	3,492,202	519,765	744,704	29,003	1,795,185	77,785	3,182,942	91.14	309,260	358,743	—49,487	—427,430
Minnesota & International	194	62,387	30,321	97,327	8,954	17,757	533	51,815	3,542	82,600	84.86	14,727	4,862	9,847	15,972
Mississippi Central	164	36,420	21,766	75,815	32,134	34,652	2,243	49,148	7,585	125,762	165.88	—49,947	3,917	—53,976	—37,085
Missouri & North Arkansas	365	87,010	43,365	167,544	55,534	38,855	3,152	80,495	8,355	186,390	111.24	—18,846	6,242	—25,062	32,986
Missouri, Kansas & Texas	1,713	2,023,083	763,636	3,473,958	467,755	941,070	34,400	1,235,482	84,244	2,778,658	79.98	695,300	108,840	586,041	625,564
Missouri, Kansas & Texas, of Texas	1,796	1,257,492	800,529	2,584,698	522,133	570,860	29,299	1,550,118	75,082	2,770,887	107.20	—186,189	59,461	—246,498	—84,076
Missouri, Oklahoma & Gulf	329	135,777	22,589	174,085	55,340	79,792	1,784	113,506	10,772	261,428	150.17	—87,343	18,466	—105,931	—33,580
Missouri Pacific	7,299	6,533,073	1,686,757	10,495,227	1,512,321	2,161,254	104,393	3,945,930	229,659	7,988,087	76.11	2,507,140	333,291	2,170,781	2,531,194
Mobile & Ohio	997	1,137,191	188,977	1,590,718	267,719	470,900	35,219	729,129	44,909	1,548,896	97.37	41,822	50,000	—8,260	81,048
Monongahela	108	259,905	21,852	293,970	56,966	70,868	1,071	164,767	6,551	300,223	102.13	6,253	5,000	—11,253	—81,466
Monongahela Connecting	6	.....	.....	224,329	24,377	26,403	519	106,859	5,111	163,269	72.78	61,060	2,200	58,860	99,642
Montour R. R.	56	78,341	1,328	80,011	19,013	36,593	1,191	35,153	6,734	99,138	123.90	—19,127	2,431	—21,557	11,316
Morgan's, Louisiana & Texas	400	590,896	186,813	902,925	62,783	124,868	8,806	276,736	21,658	497,193	55.07	405,732	36,543	368,816	273,755
Nashville, Chattanooga & St. Louis	1,247	1,207,341	468,695	2,154,691	249,313	524 382	68,689	835,327	46,991	1,739,304	80,72	415,387	46,000	368,709	543,019
Nevada Northern	168	155,491	8,862	169,477	20,513	29,494	1,140	44,057	5,780	101,128	59.67	68,349	9,267	59,082	—5,047
New Jersey & New York	47	16,704	76.172	108,999	8,877	18,825	238	61,491	2,388	91,818	84.23	17,180	3,800	13,378	24,206
New Orleans & Northeastern	399	496,954	94,916	730,236	116,564	139,939	13,952	245,165	16,375	536,239	73.43	193,998	29,123	164,516	115,957
New Orleans, Great Northern	284	155,478	38,496	202,873	42,328	46,149	1,926	88,750	7,669	187,208	92.27	15,664	11,000	4,645	—8,739
New Orleans, Texas & Mexico	191	101,535	39,041	172,446	50,986	34,403	4,372	66,712	6,630	163.693	94.92	8,753	11,000	—2,274	44,336
New York Central	6,072	15,722,220	6,337,397	30,197,292	2,318,967	6,164,191	240,449	13,685,990	640,597	23,471,604	77.72	6,725,687	1,044,051	5,680,450	2,417,136
New York, Chicago & St. Louis	574	1,981,336	71,418	2,193,657	192,310	401,304	33,243	1,093,446	55,291	1,780,136	81.14	413,521	60,000	351,777	874
New York, New Haven & Hartford	1,965	4,330,255	3,679,779	10,313,075	1,133,552	2,277,817	41,654	5,129,244	302,040	9,045,396	87.70	1,267,679	315,000	951,233	1,534,459
N. Y., Ontario & Western	569	481,891	100,176	735,167	137,773	229,941	8,637	506,186	23,027	905,564	123.17	—170,397	27,500	—197,897	—128.865
New York, Pailadelphia & Norfolk	121	429,256	96,400	580,493	54,340	175,684	14,278	345,713	12,729	618,926	106.62	—38,433	19,451	—57,894	—169,412
N. Y. Susquehanna & Western	135	212,916	60,670	331,178	43,003	89,968	1,324	267,841	8,013	410,149	123.84	—78,971	34,587	—116,530	—142,638
Newburgh & South Shore	7	.....	.....	127,269	14,221	27,584	.....	74,435	3,862	120,100	94.36	7,169	8,293	—1,124	—2,969
Norfolk & Western	2,203	5,456,844	690,859	6,835,195	747,339	2,276,604	50,681	2,787,690	118,226	6,016,855	88.03	818,340	285,000	533.198	—58,987

Traffic News

Protection of potatoes from cold is the subject of Farmers' Bulletin No. 1091, just issued by the United States Department of Agriculture. This is a pamphlet of 26 pages profusely illustrated with drawings to show the proper methods of packing potatoes, of fixing board linings in cars and of keeping cars warm by means of stoves in winter.

Passenger mileage—number of passengers carried one mile—on the railroads under federal control during 1919 was 46,145,070,641, as compared with 42,645,969,083 in 1918, an increase of 8.2 per cent, according to the report of the Operating Statistics Section of the Railroad Administration. For December the passenger mileage was 3,789,660,400, an increase of 4.7 per cent as compared with December, 1918.

The Five Ports Association, an organization of business men formed to promote the commercial interests of Wilmington, N. C.; Charleston, S. C.; Savannah, Ga.; Brunswick, Ga., and Jacksonville, Fla., is planning an excursion, to start on May 15 from Columbia, S. C., to advertise these southern cities in the middle west. A. V. Snell, president of the Association of Commercial Secretaries of South Carolina, Columbia, is planning the details of the trip. Enough men will go to fill a train of about eight or ten cars. The itinerary covers sixteen days and will take the party to Cincinnati, Cleveland, Toledo, Detroit, Chicago, Davenport, Rock Island, Moline, Kansas City, St. Louis, Indianapolis, Louisville, Nashville, Chattanooga and Atlanta.

"Shippers' Conference Committee of Greater New York" is the name adopted by representatives of 100 or more leading merchants and manufacturers who have formed an organization for the discussion of traffic matters, with the intention of holding meetings in the rooms of the Merchants' Association, in the Woolworth Building, on the second Tuesday of each month. Following are the officers of the committee: Chairman, T. T. Harkrader, traffic manager American Tobacco Company; vice-chairman, W. J. L. Benham, general traffic manager Otis Elevator Company; secretary and treasurer, P. W. Moore, traffic manager Queensboro Chamber of Commerce; board of governors, Paul Ripley, traffic manager American Sugar Refining Company; J. C. Lincoln, manager, traffic bureau Merchants' Association, and Philip Croxton, traffic manager P. Lorillard & Co.

The Southern Railway is encouraging the growing of live stock by assisting farmers in improving their herds (through the Live Stock Department) by giving special attention to the provision of loading and feeding facilities for cattle shipped to market. The Development Service has named H. C. Bates, C. W. Humphrey, J. D. Moore, and G. C. Prescott as agents to cover the entire Southern territory, working under the direction of General Agricultural Agent R. Turner, Atlanta, Ga. The Live Stock (transportation) Department now watches every detail of service carefully. Executive General Agent E. C. Gatewood has appointed N. Moore, assistant general agent, Rectortown, Va.; F. L. Word, general live stock agent, Atlanta, Ga.; V. A. Slaughter, live stock claim agent, Washington, D. C.; C. L. Shepherd, Alexandria, Va.; J. W. Houston, Birmingham, Ala.; and R. S. Taylor, Cincinnati, Ohio, live stock route agents; R. L. Humphrey, chief veterinary surgeon, Rectortown, Va.; F. R. Butz, assistant chief veterinary surgeon, Cincinnati, Ohio.

Freight Traffic Movement and Car Performance

Railroads under federal control during the month of January moved 34,769,722,000 ton miles of revenue and non-revenue freight, an increase of 14.5 per cent as compared with January, 1919, according to the monthly report of the Operating Statistics Section of the Railroad Administration. The net ton miles per mile of road per day averaged 48.66 as compared with 42.58. The train miles increased 10.9 per cent and the car miles 9.4 per cent, while the net ton miles per loaded car mile decreased from 28.9 to 28.3 and the car miles per car day increased from 21.4 to 22.8. The net ton miles per train mile increased from 625 to 646 and the net ton miles per car day from 409 to 457. Increases in total net ton mileage were shown in all regions. For the Southern region the increase was 31.3 per cent and for the Ohio-Indiana district is was 38.4 per cent.

Boston-Pittsburgh Expresses

The New York, New Haven & Hartford and the Pennsylvania are going to put on a new train between New England and the west by way of the Hellgate bridge and the Pennsylvania station, New York. Beginning March 28 the "Pittsburgh Express" will leave Boston at 1:30 p. m., and being combined at Philadelphia, at 10:25 p. m., with train No. 19, will arrive in Pittsburgh at 8:12 a. m. Eastbound, the "New England Express" will leave Pittsburgh at 3:10 p. m. (existing train No. 46) and will reach Boston at 9 a. m. Connections will be made at New Haven to and from Hartford and Springfield. Also, a new day express will be run from Philadelphia to New Haven, leaving at 8:30 a. m., and arriving at 1 p. m. A new night train from Boston to Philadelphia will leave at 11 p. m., taking the sleeping cars which at present go on the Federal express at 7:30 p. m. The new train will arrive at Philadelphia at 7:50 a. m. It will have sleeping care from Boston and from Providence.

A train between Boston and the west by this route was started in November, 1917; but in January, 1918, this train (with many others) was taken off because of war-time conditions.

Anthracite Shipments

The shipments of anthracite for February, 1920, as reported to the Anthracite Bureau of Information at Philadelphia were 4,913,664 tons, as compared with 5,713,319 tons in the preceding month, and with 3,871,932 tons shipped during February last year, which has the distinction of being the smallest monthly shipment of anthracite for the past eighteen years, with the exception of the strike period. Total shipments for eleven months ending February 29, were 63,737,213 tons, as compared with 67,728,849 tons in the eleven months ending February 28, 1919.

The shipments by carriers were as follows:

	February, 1920	February, 1919	Coal Year, 1919-1920	Coal Year, 1918-1919
P. & R.	1,038,303	725,809	12,934,447	13,339,828
L. V.	928,208	643,551	11,628,611	12,586,368
C. R. R. of N. J.	408,052	334,697	5,720,217	5,928,059
D. L. & W.	827,172	597,604	9,871,581	10,233,528
D. & H.	455.003	629,929	7,137,786	8,162,731
Penna.	394,366	273,031	4,545,955	4,755,812
Erie	491,608	371,033	6,929,201	7,588,336
N. Y. O. & W.	135,957	108,029	1,840,232	1,749,351
L. & N. E.	234,995	188,249	3,129,183	3,384,836
	4,913,664	3,871,932	63,737,213	67,728,849

Off Line Agencies in Chicago

Except for the Chicago & North Western and the Minneapolis, St. Paul & Sault Ste. Marie, the railroads which have united in the consolidated ticket offices at Chicago will continue to use the consolidated offices temporarily. The Chicago & North Western, on March 1, re-opened its offices at South Clark and West Adams streets which it occupied prior to the creation of the consolidated office. The Minneapolis, St. Paul & Sault Ste. Marie has re-opened its old offices at 140 South Clark street.

Among the roads not reaching Chicago directly, the Union Pacific has opened offices in the Garland building, with R. R. Robertson and George R. Bierman in charge respectively of the freight traffic and the passenger departments. The Delaware, Lackawanna & Western has opened a general western freight and passenger office at 111 West Jackson boulevard, with C. C. Barrett, passenger, and H. J. Graham, freight agent in charge. The Atlanta, Birmingham & Atlantic has re-established its Chicago office in the Harris Trust building in charge of H. J. Hanson, commercial agent. The Southern has relocated its commercial freight office at Chicago in the Southern Pacific building. Pending office improvements, temporary quarters have been established in the Majestic hotel. The St. Louis-Southwestern has re-opened its office in Chicago, with M. W. Christopher, general passenger agent in charge. Temporary offices will be in the Royal building until after May 1, when permanent offices will be in the National Life Insurance building.

National Industrial Traffic League

The Spring meeting of the National Industrial League will be held at St. Louis, Mo., on March 18 and 19. Two business sessions will be held. The following is the docket, in part, of the subjects to be discussed:

Report of Executive Committee:
- Report of executive secretary on railroad legislation.
- Cash settlement of freight charges under section 405 of transportation act.
- Provisions for changes in state and interstate rates and fares in effect February 29, 1920, under Section 208 (A) of transportation act.
- Inland waterway committee's report for annual meeting approved by executive committee with modifications.
- Reparation claims arising during period of Federal control.
- Apnointment of standing committee on highway transportation.
- Resolutions.

Report of Freight Claims Committee:
- Liability of public warehouses on shipments damaged by fire.
- Filing claims for loss or damage after expiration of six months' period provided in Section 3 of uniform bill of lading.

Report of Committee on Diversion and Reconsignment:
- Diversion and reconsignment rules 10, 11 and 12.
- Second reconsignment in case of bona fide refusal or of insolvency of consignee.
- Interpretations of diversion and reconsignment rules.

Report of Committee on Export and Import Traffic:
- Demurrage and storage charges at seaboard on export traffic.
- Three per cent war tax on transportation charges.
- Proposed storage charges on export freight at Philadelphia.
- Unification of terms used in export traffic.
- Traffic Circular No. 1 issued by United States Shipping Board.
- Export vs. domestic rates.
- H. R. 9823 relative to American merchant marine.
- Ship mortgage bill—H. R. 8873 and 9419.
- Tarough bills of lading.

Report of Express Committee:
- Consolidated express companies.
- Proposed advance in express rates.
- Failure of wagon service.
- Credit arrangements.
- Periods of limitation.
- Adams and Southern express companies' claims.
- Period for filing of claims.
- Proposed form for reporting concealed loss and damage express claims.
- Pro rata settlement of claims for partial loss.
- New system of express waybills and receipts.
- Parcel post.

Report of legislative committee:
- Liability of telegraph companies.
- Iten Biscuit Co. case involving question of reparation.
- Prohibiting issue of attachment, etc., for one year—House Bill No. 10,368.

Reduced Rate Order No. 1

The Interstate Commerce Commission has issued Reduced Rate Order No. 1 prescribing regulations under which carriers are to apply for the approval of the commission for changes in their tariffs which result in either a reduction of charges to shippers or of the revenues of the carriers. The new law prohibits such reductions without the approval of the commission during the six months guaranty period, and the regulations are somwhat similar to those formerly prescribed when carriers were prohibited from filing a tariff containing an increased rate without the approval of the commission.

Applications must show the rates, fares, charges and classification which it is proposed to reduce, including rules or regulations affecting charges, as well as the nature and extent of the reductions, the way in which they are to be effected, and the proposed rates, etc., of which approval is sought, and must also contain a complete and accurate statement of the reasons claimed to justify the reductions sought. If it is proposed to reduce a large number of rates, fares, etc., by a uniform specific amount or percentage, the application, instead of showing each specific change, may show the present and proposed rates, fares, etc., between typical points and state the amount or per cent.

Express Company Asks Increased Rates

The American Railway Express Company in a petition filed with the Interstate Commerce Commission on March 13 proposed an increase in express rates ranging from 10 to 75 per cent, the higher increase being proposed for Zone 1, which corresponds in a general way to Official Classification territory. To put the express rates on a proper basis, the petition said, would require an increase in the haulage charge of 75 per cent in Zone 1, 50 per cent in the other zones, 60 per cent in the inter-zone rates between Zone 1 and the other zones and 50 per cent in the inter-zone rates between the other zones; also an increase in the original combined terminal charge from 45 cents to 60 cents except in Zone 4; also an increase in commodity rates of 25 per cent over the present rates in Zone 1, 10 per cent in the other zones and 15 per cent between Zone 1 and the other zones. The 60 cent combined terminal charge, the petition said, should be divided 35 cents between the express terminal charge and 25 cents for the railway terminal charge.

Express rates have been increased since September, 1915, the petition said, by 19 or 20 per cent. The increase made by the director general of railroads in General Order No. 56 amounted to 8 per cent and the increase of 10 per cent allowed by the Interstate Commerce Commission in June, 1918, amounting to $10,000,000 or $12,000,000, had been more than absorbed by increased wages. For the calendar year 1919 the company had an operating deficit of $22,000,000 in spite of the economies resulting from unification, because of the large increases in wages and in the prices of materials and supplies. For the last six months of 1919 the deficit was $15,723,000 and for January and February, 1920, it was proportionately greater. A further increase was declared absolutely necessary to enable any company that might conduct the express business to earn expenses and something over for profit. As illustrating the effect of the introduction of the eight-hour day and the increased rate for overtime allowed by the Railroad Administration, it was stated that whereas before the company had paid less than $50,000 a month for overtime, in December, 1919, its overtime payments had amounted to $1,022,271.

Off-Line Traffic Offices in New York City

Twenty-five or more railroads not running trains to or from New York City have re-established their freight offices, and many of them their passenger offices, and are prepared to do business as before the advent of federal operation.

The Traffic Club Bulletin has issued a list of these offices including street addresses (many of which are temporary and to be abandoned May 1), from which we take the following:

Atchison, Topeka & Santa Fe; C. H. Morehouse, general agent; E. F. Burnett, district passenger agent.

Atlanta, Birmingham & Atlantic; H. G. Benedict, general eastern agent.

Atlanta & West Point, Western of Alabama, and Georgia Railroad; M. M. Ansley, general eastern agent.

Canadian Pacific, Soo Line and Duluth, South Shore & Atlantic; M. S. Throne, general agent, freight department, and F. R. Perry, general agent, passenger department.

Central of Georgia; H. R. McLean, eastern traffic agent.

Chicago, Burlington & Quincy; J. A. Martin, general agent, freight department.

Chicago, Rock Island & Pacific; S. L. Parrott, general agent, freight department.

Denver & Rio Grande; W. C. Connor, Jr., general eastern agent.

Detroit & Cleveland Navigation Company; E. H. MacCracken, acting general eastern agent.

El Paso & Southwestern; B. L. Birkholz, general agent.

Illinois Central; C. R. Phoenix, general eastern agent, and F. S. Bishop, general eastern passenger agent.

International & Great Northern; E. H. Harkrader, district freight and passenger agent.

Kansas City Southern; C. P. Hoch, general agent.

Louisville & Nashville; C. A. Swope, eastern freight agent; Ira F. Schwegel, eastern passenger agent.

Minneapolis & St. Louis; C. E. Harris, general eastern agent.

Missouri, Kansas & Texas; R. S. Fife, general eastern agent, and G. R. Chosbrough, eastern passenger agent.

Missouri Pacific; J. B. Trimble, general agent.

Norfolk & Western; S. M. Stevenson, general eastern agent.

Northern Pacific; T. B. Montgomery, general eastern agent.

Pere Marquette; E. B. Johns, general eastern agent.

St. Louis & San Francisco; W. C. Preston, general eastern agent.

Seaboard Air Line; H. M. Runyon, general eastern freight agent.

Southern Pacific; Wm. Simmons, general freight and passenger agent (Morgan Line); C. M. Evans, assistant general freight and passenger agent; S. C. Chiles, general agent, freight department; A. J. Poston, general agent, passenger department.

Southern Railway and Mobile & Ohio; J. E. Fitzwilson, general eastern freight agent.

Union Pacific; J. B. DeFriest, general agent; I. W. Carter, district passenger agent; H. L. Gardner, passenger agent, and F. N. Wells, freight traffic agent.

Wabash; H. B. McClellan, special traffic representative and L. C. Bostwick, general agent freight department.

Western Maryland; S. J. Lamareux, general eastern agent.

Commission and Court News

United States Supreme Court

United States Supreme Court on Free Passes

In an action for damages by a New York Central engineman for injuries sustained in a rear collision on his employer's railroad, which he averred was caused by the gross negligence of the engineman in failing to look for and heed danger signals, it appeared that the plaintiff had a run between Air Line Junction and Collingwood wholly within the state of Ohio, and he was travelling on a pass good between these two points which contained a release from liability for accidents. He was on his way to Pittsburgh, and intended to pay his fare from Cleveland to Youngstown over the Erie, and to obtain another pass to take him to Pittsburgh. The collision occurred between Toledo and Cleveland. The train had come to a stop at a station and the second section of the train ran past distant and home block signals set against it.

The Supreme Court of the United States affirms a judgment of the Ohio Court of Appeals finding for the plaintiff for the following reasons: The only contract between the New York Central and the plaintiff was the latter's annual pass. That, however, was good only between Air Line Junction and Collingwood, and the company was charged with notice when it issued the pass that the public policy of that state rendered the release upon it valueless. The plaintiff's purpose to continue his journey into Pennsylvania would have been of no avail in securing him transportation over the Erie line to Youngstown; for that he must pay the published fare, and the release on the pass to Collingwood would not have attached to the ticket to Youngstown. The contract between the railroad and the engineman was in writing and for an intrastate journey, and could not be modified by the engineman's purpose to continue his journey into another state, under a contract of carriage with another carrier, or by an intended second contract with the New York Central in terms which were not disclosed. On this point the court agreed with the judgment of the Ohio trial court and disagreed with the Court of Appeals, which latter court considered the journey was an interstate one.

But the Court of Appeals held that the negligence in the case, under the evidence, was wilful and wanton. The Supreme Court of the United States does not weigh the evidence in such cases as this, but it looked into it sufficiently to reject the argument that there was no evidence to support such a finding. "A carrier by rail is liable to a trespasser or to a mere licensee wilfully or wantonly injured by its servants in charge of its train . . . and a sound public policy forbids that a less onerous rule should be applied to passenger injured by like negligence when lawfully upon one of its trains. This much of protection was due the plaintiff as a human being who had intrusted his safety to defendant's keeping."

Mr. Justice Day and Mr. Justice Van Devanter concurred in the decision, although they held that plaintiff was using the pass in an interstate journey and that to such a use of the pass the Ohio law was inapplicable; but they thought that the releasing clause on the pass did not cover his injury, for it resulted from wilful or wanton negligence, as to which such a clause is of no force or effect.—New York Central v. Mahoney. Decided March 1, 1920.

CANNOT CHOKE THE RAILROADS.—We have to have railroads, we have to absorb railroad securities, and have to have good railroad service, and these things cannot be unless the spirit of fairness rules. You cannot choke the railroads and expect them to serve properly the people of the United States.—*Savannah News.*

COMMODITY PRICES AGAIN.—Compared with most articles and services an advance in price in the last six years of 60 per cent is relatively low. The actual railroad rate advance has averaged 33.8 per cent. This is less than the rise in price of probably any other commodity or service in the market.—*Topeka Capital.*

Foreign Railway News

The officers of the International Railway Association are planning for a general meeting of the association at Rome, Italy, in 1921.

LONDON.

Route indicators have been provided on the signals at the entrance to Liverpool Street Station, Great Eastern Railway, London, whereby 65 arms and lamps have been dispensed with.

LONDON.

Jamaica says a news item in the Times (London) Trade Supplement, owing to the high cost of railway construction, is giving attention to the possibility of utilizing road motor transport to provide feeder services to districts which badly need better transport facilities.

LONDON.

Sir Francis H. Dent, general manager of the South Eastern & Chatham, will retire from that position on March 31, 1920, at his own request. He will be succeeded by Mr. Percy C. Tempest, the present chief engineer, who will hold the joint offices of general manager and chief engineer.

LONDON.

The London, Brighton & South Coast, says the Engineer, carried in 1913, 80,000,000 passengers and in 1919, 106,000,000 or over 30 per cent more. The train mileage was however 27 per cent less. After allowing for the 50 per cent increase in passenger fares, there was an increase of 24 per cent in the London and Brighton passenger traffic and of 27 per cent in the London and Eastbourne passenger traffic.

LONDON.

M. Le Trocquer, the new Minister of Public Works appointed by the French President of the Council, M. Millerand, was one of the most efficient of the collaborators of M. Claveille, the former Minister of Public Works. M. Le Trocquer had the reputation of being a "good listener" at the conferences, a small talker and a very hard worker. His great experience and ability will be tested to their utmost in solving one of the most difficult and serious problems in France today, the transportation crisis.

Deficit on English Railways for November, 1919

LONDON.

The Ministry of Transport has issued a return in which it is stated that the financial results for railway operation in November, 1919, showed a loss of £1,347,835.

State to Take Over Control of German Railways

LONDON.

The state, on April 1, will take over the entire German railway system and the whole of the transportation services including road and aerial traffic will be taken in hand and thoroughly reorganized.

Deficit on State Railways of Sweden

LONDON.

Swedish Export states that there has been a loss on the working of the State railways of Sweden during the last few years owing to the high price of coal, and which it has not been possible to make good by a rapid succession of increases in rates. There was a large loss in 1919, but it is expected that there will be a surplus this year because of advances in rates.

Thefts on Prussian Railways

In the course of a statement in the Prussian Diet, Herr Deser, minister of public works, hinted at the necessity of reintroducing a piecework system in the state railway shops. He also stated that during the last year material and tools valued at 5,000,000 marks (about $1,000,000 at normal rates of exchange) were stolen and that during last December 1,700 railwaymen were arrested on charges of theft.

French Railway Rates to Be Raised

LONDON.

The Review of the American Chamber of Commerce in France says that the official committee reports rendered to the French Senate declare in favor of the proposed increase in railway rates. In face of the big deficit, the increases recommended are 45 per cent in third-class passenger fares, 50 per cent for second-class, 55 per cent for first-class and 115 per cent in freight rates. The total deficit of the railways has accumulated since the beginning of the war amounts to $700,000,000.

Present Cost Price of Rolling Stock in France

A French paper called the "Journee Industrielle" has recently made a study of the present cost of prices of rolling stock in France. The results of this investigation show that it costs from $4,050 to $5,400 for a box-car, $3,375 to $4,725 for a gondola car, and $2,025 to $2,700 for a flat car. The cost price of a modern passenger car, equipped with the latest improvements, is about $67,500 for a first-class, $43,875 for a second-class and $33,750 for a third-class carriage. The prices noted at given at present rates of exchange.

Railway Material for Roumania

The British Board of Trade Journal in a recent issue quotes the British commercial secretary at Bucharest as advising that firms desiring to sell any of the materials required by the Roumanian State Railways should place themselves in touch with La Direction des Ateliers, Chemins de fer Roumania, Bucharest.

The commercial secretary says that there is little likelihood of business being done by British firms who merely write on such matters, and it is suggested that capable agents should be sent out or local representatives should be employed for the purpose of putting forward their offers of materials to any department of the Roumanian Government.

Extension of the Uganda Railway Authorized

A cablegram to Commerce Reports from the American consul at Nairobi, British East Africa, says that the building of two extensions of the Uganda railway has been authorized by the British Government. The plan is as follows: One meter gage from Nakuru to Mumias, 200 miles, and one-meter gage from Thika to Nveri, 70 miles, sidings, etc., bridges spanning the Thika, Maragua Mathioye, and Monilev Rivers to be 200 feet each, Sergoit and Eldoret, 100 feet each; Nzoia, 400, and a considerable number of small bridges averaging 50 feet. The contract has been taken by Griffiths & Co., 3 Central Buildings, Westminster, London, principals of Gailey & Roberts, the Nairobi agents, according to a statement by the latter.

Railway Construction in the Congo

The Belgian Minister for the colonies in a communication to the press, says Vice-Consul Harry Tuck Sherman, Antwerp, in Commerce Reports, included the following as among the projects of his department for the Congo:

About $6,200,000 is to be spent on the improvement of the Katanga Railroad. Bukama, on the Kongo River, the present terminus of the Katanga Railroad, not being accessible to the steamers in all seasons the railroad is to be extended to Kiabo. The first section of the Belgian railroad of Lobito, which will greatly shorten the journey to Katanga and Rhodesia, is about to be laid down. This section will connect Tshilongo (to the northwest of Kambove) with Ruwe, which latter place will be reached before January 1, 1923.

Loss and Damage on French Railways

LONDON.

The Review of the Chamber of Commerce in France says in a recent issue that one of the French railroads reports that its disbursement for losses, delays and damages of merchandise in transit for October, 1919, amounted to $450,000, whereas these figures for the entire year of 1913 were $350,000, by way of comparison. The greatest proportion of the total is the loss from damages caused by rough handling on the quays or in the distributing stations.

The same paper says also that some of the French manufacturers and other persons interested in export trade protested against the new rise in freight rates, made on February 23, and asked to have a special and lower rate accorded on export shipments. Their request was not granted, however.

Exports of Car Wheels and Axles in January

The exports of car wheels and axles in January totaled $652,251. This amount was greater than the exports for December but not as large as those for November. The detailed figures as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

EXPORTS OF CAR WHEELS AND AXLES

Countries		Countries	
France	$259,690	Brazil	5,771
Italy	169,200	Chile	470
England	908	Colombia	16
Canada	57,824	Ecuador	580
Honduras	716	British Guiana	34
Nicaragua	1,534	Peru	2,295
Panama	752	Venezuela	914
Salvador	1,097	China	840
Mexico	11,422	Kwangtung	81,800
Jamaica	383	Hongkong	28
Cuba	40,168	Japan	6,913
French West Indies	49	New Zealand	2,565
Haiti	264	Philippine Islands	1,487
Argentina	4,531		
		Total	$652,251

French Imports and Exports

LONDON.

The American Chamber of Commerce of France in its February 15 bulletin gives a list of the articles imported into France from the United States and exported from France to the United States for the first eleven months of 1919, 1918 and 1913. In this list among the imports are mentioned the following, the values being translated into dollars at the ordinary rate of exchange.

	1919	1918	1913
Machines and machinery	115,800,000	69,654,000	10,786,000
Tools and hardware	50,120,000*	45,890,000	965,000

Corresponding to these are the figures for the exports to the United States from France for the same period, which are as follows:

	1919,	1918,	1913,
Machines and mechanical appliances	200,000	90,800	185,000
Tools and manufactures of metal	200,000	150,000	500,000

*Including the quantities imported to regularize the imports made in 1918 for the government.

Exports of Locomotives in January

The exports of steam locomotives in January numbered 146, valued at $4,159,214, representing a larger total than for any month in 1919 with the single exception of October. Italy, Cuba and Brazil were the largest customers for the month. The detailed figures as compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

EXPORTS OF STEAM LOCOMOTIVES

Countries	Number	Dollars
Azores and Madeira Islands	3	75,300
Italy	60	2,280,000
Canada	7	16,341
Panama	1	2,085
Mexico	3	32,250
Cuba	36	912,425
Dominican Republic	1	2,216
Argentina	3	21,000
Brazil	24	596,200
Venezuela	1	15,600
China	2	20,000
Dutch East Indies	3	149,520
Philippine Islands	2	36,277
Total	146	4,159,214

Pipe Line for Fuel Oil from Havre to Paris

LONDON.

The "Journee Industrielle," announces that a company called the Compagnie Francaise de Transport des Mazouts et Petroles" has just been organized by the Paris bankers, Dupont and Furland, to construct the proposed pipe line between Havre and Paris for carrying fuel oil. The rapid completion of the pipe line is of the greatest interest on account of the shortage of coal which occurs nearly every winter in Paris due to the fact that the railroads cannot carry all the coal needed and because the boat service on the Seine is almost always stopped by the floods for a long period. Many furnaces have already been transformed in Paris to enable them to use fuel oil for heating and manu-

facturing purposes and it is planned to do this on a very large scale with the advent of the new pipe line. This pipe line will also be able to furnish the Paris, Lyons, Mediterranean Railroad which has been carrying on a series of interesting and successful experiments in connection with equipping locomotives with the American system for burning fuel oil.

Catalogues for Mesoptamian Railways

LONDON.

The Department of Overseas Trade, 35, Old Queen Street, S. W. 1., advises that it has received information to the effect that the Superintendent of Stores, Mesopotamian Railways, in order to facilitate the preparation of demands and also for his general guidance, is desirous of obtaining copies of manufacturers' catalogues dealing with: Locomotives and rolling stock, standard, meter gage and narrow gage; steam and oil pumps of all descriptions; motor rail cars; permanent way material (rails, fastenings, etc.), sectional, wrought-iron, cast-iron and staging tanks, etc.; machinery—workshop, repair and manufactory; heavy and light tools as used on railways; instruments—surveying, mathematical and precision; lights—flare, high-power and ordinary; piping, wrought-iron and fittings; general hardware; cranes—hand and power, stationary and traveling, all purposes; general electrical plant and accessories; engines—stationary and portable, steam and oil; ropeways; conveyors, elevators, etc.; labor saving devices generally. The catalogues should be forwarded directly to the superintendent of stores, Mesoptamian Railways, Makinah, Mesopotamia.

Exports of Cars in January

The exports of freight cars in January numbered 1,724, valued at $3.032,309. Passenger cars exported numbered 16, valued at $205,811 and an item "parts of cars" is given, the total for which was $1,658,439. The detailed figures compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

EXPORTS OF CARS FOR RAILWAYS

	Passenger		Freight and other		For other railways		Parts of Cars.
Countries	Number	Dollars	Number	Dollars	Number	Dollars	Dollars
France	..	.....	525	1,055,301	.....	.....	951,628
Italy	..	.....	360	753,760	.....	.....	599,280
Portugal	..	.....	..	.....	.....	.....	10,500
Spain	..	.....	.....	.....	.....	.....	244
England	..	.....	.....	.....	.....	.....	3,240
Canada	1	1,360	18	26,849	25	41,955	51,228
Guatemala	..	.....	1	1,070	.....	.....	639
Mexico	1	6,800	23	32,875	29	3,205	2,395
Jamaica	..	.....	.....	.....	.....	.....	18,700
Other British West Indies	..	.....	10	2,800	.....	.....	.....
Cuba	14	197,651	759	1,146,466	87	68,456	3,640
Dominican Republic	..	.....	.....	.....	116	110,718	.....
Argentina	..	.....	.....	.....	.....	.....	3,474
Bolivia	..	.....	.....	.....	2	2,664	.....
Brazil	..	.....	.....	.....	6	2,375	1,431
Peru	..	.....	6	2.988	70	5,250	.....
China	..	.....	12	10,200	.....	.....	.....
Kwantung	..	.....	.....	.....	.....	.....	11,760
Philippine Islands	..	.....	.....	.....	50	12.046	280
Total	16	205,811	1,724	3,032,309	385	246,669	1,658,439

Development of East Persian Railways

Consul E. Verne Richardson, Karachi, India, has sent to Commerce Reports the following extract from a local paper concerning railway development in Persia:

In the course of an interview with His Excellency Shaukat-ul-Mulk, governor of Seistan, who has been making a stay of a few days in Karachi en route for Kerbela, a representative of the Daily Gazette (Karachi) learned that the Quetta-Nushki railway has now been carried forward to Duzdab on the Persian frontier, about 30 miles south of the southwestern point of the Afghan frontier and about 120 miles south and slightly west of Nasratabad (or Seistan), the capital town of the governor's Province. His Excellency is also governor of the Province of Kainat, north of Seistan, and is thus in charge of the greater portion of the Afghan-Persian frontier. He is very optimistic as to the future of Persia and the effect of the Anglo-Persian agreement if the Persians themselves seize their opportunities. He is also convinced of the great possibilities of the extension of trade between India and East Persia as soon as the Nushki railway, which is at present used for purely military purposes, is made available for mercantile traffic. From the present terminus of the line there is a good motor road through Neh and Birjand to Meshed in the extreme north, and another road to Kerman, which is about 210 miles west-northwest of Duzdab.

Asked as to the possibilities of railway development in East Persia, he pointed out the advantages of a line from Duzdab northward near the frontier, which would tap the fertile districts around Herat, the granary of Central Asia. Many schemes are being discussed and internal railway development is likely to receive early attention from the ministers.

At present Bombay is the chief entrepôt for trade with East Persia, but His Excellency could see no reason why Karachi merchants should not secure a substantial portion of the anticipated greatly increased trade. He expressed his willingness at all times to afford any information within his power likely to be of service to merchants who contemplate opening up relations with East Persia by the overland route.

Exports of Railway Track Material in January

Exports of rails in January totaled 44,449 tons valued at $2,602,916; of spikes 1,653,569 lb. valued at $61,372, and of switches, frogs, splice bars, etc., valued at $237,178. The detailed figures compiled by the Division of Statistics of the Bureau of Foreign and Domestic Commerce are as follows:

EXPORTS OF RAILWAY TRACK MATERIAL

	Spikes		Steel rails		Switches, frogs, splice bars, etc.
Countries	Pounds	Dollars	Pounds	Dollars	Dollars
France	.....	.....	3,114	273,119	325
Norway	.....	.....	157	10,228	882
Portugal	.....	.....	.....	.....	3,578
Spain	.....	.....	.....	.....	164
Sweden	.....	.....	25	1,585	1,375
England	1,564	110	51	3,950	10,553
Scotland	.....	.....	1,578	93,155	5,690
Ireland	.....	.....	278	17,619	396
British Honduras	2,400	122	231	14,226	104
Canada	38,640	1,146	369	20,204	14,452
Costa Rica	7,000	339	.....	.....	27
Guatemala	2,200	104	.....	.....	698
Honduras	43.000	1,740	.....	.....	11,833
Nicaragua	1,000	98	.....	.....	19
Panama	.....	.....	.....	.....	755
Mexico	64,546	2,862	691	32,971	15,192
Newfoundland and Labrador	.....	.....	.....	.....	15
Jamaica	13,300	645	.....	.....	.....
Trinidad and Tobago	400	18	523	25,923	.....
Other Brit. West Indies	12,400	660	117	5,333	835
Cuba	504,412	20,305	8,388	475,041	61,710
French West Indies	2,394	121	47	3.700	536
Haiti	64,200	1,496	650	38,082	.....
Dominican Republic	91,816	4,405	847	40,804	1,906
Argentina	.....	.....	.....	.....	7,058
Brazil	24,457	1,379	6,912	431,263	20,504
Chile	1,000	190	38	2,425	751
Colombia	16,000	690	.....	.....	830
Ecuador	4,000	170	.....	.....	168
Peru	.....	.....	.....	.....	719
Venezuela	5,600	140	168	4,209	140
China	.....	.....	1,573	78,133	.....
Straits Settlements	.....	.....	24	1,524	1,937
Dutch East Indies	.....	.....	580	29.867	12,741
Hongkong	.....	.....	74	2,060	.....
Japan	518,840	17,535	15,273	846,154	45,513
Australia	.....	.....	167	9,474	1,421
New Zealand	.....	.....	150	9,541	444
Philippine Islands	234,400	7,097	2,424	132,326	13,907
Total	1,653,569	61,372	44,449	2,602,916	237,178

Delivery of Polish Locomotives Delayed

The Polish Bureau at Washington has been informed that the delivery of 82 Baldwin locomotives, representing a little over half of a $7,000,000 order placed with the Baldwin Locomotive Works by the Government of Poland, is held up for two months by the enormous freight congestion at the port of Danzig. This report has just been made to the Polish Legation by Jan Drozdowski, of Warsaw and New York, who conducted the negotiations with Samuel L. Vauclain, president of the Baldwin Locomotive Works. Mr. Drozdowski has just returned from Poland. The order was for 150 locomotives, 68 already having been delivered. The locomotives are standard gage consolidations. All railway lines east into Russia are 5-ft. gage, while all lines west into Germany are standard. The locomotives turned over to Poland by Germany under the terms of the armistice were of every type and in bad condition, so it was impossible to standardize them or to have suitable spare parts on hand for emergency repairs.

The tie up in rail communications makes it impossible for Poland to begin cutting and exporting timber and lumber, in which a large trade is expected. The situation reacts unfavorably against the Polish market exchange rate.

Railway cars are needed in large numbers, but can be built in Polish factories and steel rails can be made in the big plants at Ostrowiec and Warsaw. The situation affects Poland in another way by making it impossible to get sufficient coal for industry or domestic use. This was one reason the locomotives were ordered from the United States for quick delivery.

Great Central Railway Building New Cars

The Great Central Railway has now in hand the building of 1,500 standard freight cars. These cars are 19 ft. long, are of the open type and are rated to carry ten tons. In addition to these, orders have been placed for 850 cars with contracting firms, which are to be used for steel and timber traffic.

The company also has in hand some new passenger vehicles intended for use in London suburban service. There are four distinct types; third-class and brake cars with six passenger compartments; composite cars with four first-class and four third-class compartments; first-class coaches with eight compartments and third-class cars with nine compartments. Trains of four and five coaches will be made up from these vehicles, the former having a capacity of 64 first-class and 250 third-class passengers, and the latter giving accommodation for 96 first and 300 third-class passengers. These new coaches will be of a maximum transverse width permissible by the limitations of the load gage and the length of the vehicles will be 56 ft. A special feature of the construction will be the provision of anti-collision protective steel armoring, telescopic buffers and alinement preserving and shock absorbing buffers, safety locks of the Kaye type, and fire and accident appliances. The coaches will be mounted on steel underframes carried upon 4-wheeled bogies of 8-ft. wheel base. The electric light equipment will not only include supplementary control of individual reading lights but illuminated destination indications.—(*From the Times Trade Supplement, Feb.* 28, 1920.)

National Foreign Trade Convention

The theme of the Seventh National Foreign Trade Convention to be held in San Francisco on May 12 to 15 will be "The Effect of Being a Credit Nation." The convention will follow its usual method of having general and group sessions. Trade advisors will be present from both domestic and foreign firms and organizations. The program committee has also prepared plans for various side trips and excursions and other entertainment and it is hoped to have three special trains from the East to carry the delegates to the convention. The tentative program for the convention is announced by O. K. Davis, secretary, Hanover Square, New York, as follows:

FIRST GENERAL SESSION, WEDNESDAY, MAY 12.
10 a. m.

Convention called to order by James A. Farrell, Chairman, National Foreign Trade Council.
Organization of convention.
Session Topic: Fundamentals of Our Foreign Trade.
1. The relations of our productive capacity to foreign trade.
2. The financial situation.

SECOND GENERAL SESSION, WEDNESDAY, MAY 12.
2.30 p. m.

Session Topic: Imports and Exports.
1. Function of imports in our foreign trade.
2. The future of our exports.
3. The part played by our new merchant marine.

GROUP SESSIONS, WEDNESDAY, MAY 12.
8 p. m.

Group I.—Education for Foreign Trade.
Group II.—Credit Information.
(In cooperation with the National Association of Credit Men.)
Group III.—Financing Foreign Trade.

THIRD GENERAL SESSION, THURSDAY, MAY 13.
10 a. m.

Session Topic: Foreign Trade Policies.
1. The need for a bargaining tariff.
2. Reorganization of the foreign service of our Government.
3. The Value of American Chambers of Commerce abroad.
4. The machinery for foreign trade.

LUNCHEON, THURSDAY, MAY 13.
Palace Hotel, 1 p. m.

The American Manufacturers' Export Association will hold a luncheon, which will afterwards merge into the group session on direct selling.

GROUP SESSIONS, THURSDAY, MAY 13.
2:30 p. m.

Group IV.—Advertising for Foreign Trade.
Group V.—Practical Problems of Foreign Trade.
Group VI.—Direct Selling Abroad.
(In cooperation with the American Manufacturers' Export Association.)

RECEPTION, THURSDAY, MAY 13.
Civic Auditorium, 8 p. m.

The National Foreign Trade Council will hold a reception for the visiting delegations of foreign business men and for convention delegates. This will be followed by an exhibition of industrial films.

GROUP SESSIONS, FRIDAY, MAY 14.
10 a. m.

Group VII.—Importing.
Group VIII.—Inland Transportation for Foreign Trade.
Group IX.—Merchandising and Forwarding.

LUNCHEON, FRIDAY, MAY 14.
St. Francis Hotel, 12:30 p. m.

The advisory Committee on International Parcel Post will give an informal luncheon for the discussion of the international parcel post service as an aid to foreign trade.

GROUP SESSIONS, FRIDAY, MAY 14.
2:30 p. m.

Group X.—Banking Services for Foreign Trade.
(In cooperation with the American Bankers' Association.)
Group XI.—Foreign Trade Insurance.
Group XII.—Problems of the Export Manager.

BANQUET, FRIDAY, MAY 14.
Civic Auditorium, 7 p. m.

A most interesting entertainment is being arranged by the Local Committee for this occasion.

FOURTH GENERAL SESSION, SATURDAY, MAY 15.
10 a. m.

Session Topic: A National Program for Foreign Trade.
1. Reports of Group Sessions.
2. The Final Declaration.
3. Miscellaneous.

ADJOURNMENT.

All sessions will be held at the Civic Auditorium, unless otherwise noted.

Car Building in Russia

Commerce Reports in a recent issue publishes an interesting letter from John P. Hurley, consul at Riga, relative to ship and car building facilities at Reval. The letter is dated January 26. Those portions of it relating to car building are given in part as follows:

The position of the Dwigatel car shops is especially favorable for supplying cars to the railroads of Russia. None of the machinery of this plant was evacuated on the approach of the Germans, owing to protests of the workmen; hence the plant is complete and the managing director believes a controlling interest could be bought. Judging by the condition of rolling stock in Latvia and Esthonia, the condition of rolling stock throughout Russia must be very poor. Prior to the war there were about 600,000 freight cars in Russia, whose railway system covered about 45,000 miles. The car census per mile of track would be 13 of about 14 short tons' capacity each.

There were in old Russia, in 1917, 11 car factories, as follows: In Reval, 1; Petrograd, 2; Tver, 1; Moscow, 1; Rybinsk, 1; Kolomna, 1; Sormovo, 1; Briansk, 1; Nicolaev, 1, and Ust-Katavsk, 1. Kerensky placed among these works orders for 200,000 cars of 20 tons each, shipment to begin in 1920 and extend over five years. The position of the Reval shops would afford an early start in car building not enjoyed by any other shops. The works are running at about 25 per cent capacity repairing locomotives and cars for the Esthonian Government. The plant is intersected throughout with railways and similarly connected with the town. Erecting shops in good condition would permit work on about 200 cars simultaneously. A supply of wheels and axles, sufficient for immediate needs, is on hand, but the factory is in urgent need of tires and spring steel. The power plant is complete and of about 1,500 horsepower. The machine shop is a two-story building of limestone (as are all other buildings) about 80 feet by 250 feet and completely equipped with requisite machinery. The forge shops are about 300 feet square and equipped with about five 3-ton drop hammers. As with every factory in this country, the greatest need is coal, coke, and lubricating oil.

The director of the car-building plant states that practically all of his skilled workmen still remain and that the shops have worked continuously. Both the shipbuilding yards and the Dwigatel car-building works deserve attention, and it is extremely probable that capital of other countries is interested. The belief here obtains that in the United States alone can requisite capital be obtained, and American prestige among business interests enjoys an enviable reputation.

Equipment and Supplies

Locomotives

THE CHESAPEAKE & OHIO is inquiring for 20 Mallet type locomotives.

THE NEW YORK CENTRAL is inquiring for 20 Mallet type locomotives.

THE WESTERN OF ALABAMA is inquiring for 2 Mikado type locomotives.

THE ATLANTIC COAST LINE is inquiring for 25 Pacific type locomotives.

THE SOUTH MANCHURIAN RAILWAY is in the market for 24 24 Pacific type locomotives.

THE MONONGAHELA CONNECTING RAILROAD is inquiring for one 8-wheel switching locomotive.

THE ST. LOUIS SOUTHWESTERN has ordered 10 locomotives from the Baldwin Locomotive Works.

THE UNITED FRUIT COMPANY has ordered 3 oil burning locomotives from the H. K. Porter Company.

THE DE QUEEN & EASTERN has ordered one 2-6-2 type locomotive from the Baldwin Locomotive Works.

THE SABANA RAILROAD (COLOMBIA) has ordered 2 passenger locomotives from the Baldwin Locomotive Works.

THE STEEL & TUBE COMPANY OF AMERICA has ordered one switching locomotive from the Baldwin Locomotive Works.

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, Pa., is in the market for a 60-ton six-wheel switching engine.

PETER P. BECK, 105 Chambers street, New York, is inquiring for 8 to 10 Mikado or Pacific type locomotives, of 120 tons or over on drivers.

THE CUBA RAILROAD, reported in the *Railway Age* of March 20, as being in the market for 10 locomotives, has ordered 10 10-wheel passenger locomotives from the American Locomotive Company.

THE CHICAGO, MILWAUKEE & ST. PAUL, reported in the *Railway Age* of February 20, as inquiring for 100 Mikado type locomotives, has ordered these engines from the Baldwin Locomotive Works.

THE EAST JORDAN & SOUTHERN has ordered 1 Mogul type locomotive from the American Locomotive Company. This locomotive will have 18 by 24 in. cylinders and a total weight in working order of 121,000 lb.

THE MISSOURI PACIFIC has ordered 5 six-wheel switching locomotives from the American Locomotive Company. These locomotives will have 21 by 28 in. cylinders and a total weight in working order of 165,000 lb.

THE ANN ARBOR has ordered 2 eight-wheel switching locomotives from the American Locomotive Company. These locomotives will have 22½ by 28 in. cylinders and a total weight in working order of 220,000 lb.

THE VIRGINIAN RAILWAY, reported in the *Railway Age* of March 12, as inquiring for 10 Pacific type locomotives, has ordered 6 of these locomotives from the American Locomotive Company. These locomotives will have 26 by 28 in. cylinders and a total weight in working order of 288,000 lb.

THE UNITED RAILWAYS OF HAVANA, reported in the *Railway Age* of February 27 as being in the market for locomotives, has ordered 28 Consolidation locomotives from the American Locomotive Company, and 10 Pacific and 8 switching locomotives from the Baldwin Locomotive Works.

Freight Cars

THE ERIE is having repairs made to 1,000 gondola cars, by the Pressed Steel Car Company.

PETER P. BECK, 105 Chambers street, New York, is in the market for 3 second-hand 40-ton box cars.

THE BALTIMORE & OHIO is having repairs made to 1,000 box cars, by the Pressed Steel Car Company.

THE J. G. WHITE ENGINEERING COMPANY, 43 Exchange place, New York, is inquiring for 5 second hand box cars, for export to Cuba.

THE PRUDENTIAL OIL COMPANY, New York, is inquiring for 50 40-ton 8,000 gal. and 50 50-ton 10,000 gal. capacity, steel underframe tank cars.

THE UNITED FRUIT COMPANY has ordered 210 tram cars from the Gregg Company, Ltd. These cars are for shipment to Colombia, Honduras and Guatemala.

THE NATIONAL STEEL CAR COMPANY is asking for prices on materials for 40 all steel high-side gondolas of 30-ton capacity, and for 40 of 40 tons capacity, for export to China.

THE UNION PACIFIC is inquiring for 2,000 all steel, full-drop bottom gondola cars of 100,000 lb. capacity; an order has been given to Kilbourne & Jacobs for 24 all-steel, automatic air, side dump cars, of 20 cu. yd. capacity.

THE CUBA RAILROAD, reported in the *Railway Age* of February 20 as inquiring for 500 box cars of 40 tons' capacity, has ordered this equipment from the American Car & Foundry Company. These cars will have steel underframes and steel superstructure framing.

Passenger Cars

THE SOUTHERN PACIFIC is inquiring for 98 one-man cars for its Pacific Electric division.

THE CHICAGO GREAT WESTERN is inquiring for 6 coaches, 6 baggage, 2 mail and 2 dining cars.

THE CHICAGO, BURLINGTON & QUINCY is inquiring for 8 combination baggage and mail cars, and 10 baggage cars.

THE MISSOURI PACIFIC, reported in *Railway Age* of January 23 as being in the market for coaches and baggage cars, has ordered 10 coaches and 25 baggage cars from the American Car & Foundry Company.

Iron and Steel

THE BOSTON & MAINE is in the market for 1,100 tons of fabricated steel.

THE BOSTON & ALBANY is in the market for 225 tons of fabricated steel.

THE SOUTH MANCHURIAN RAILWAY is inquiring for 10,000 tons of 100 lb. rails.

THE DELAWARE, LACKAWANNA & WESTERN has ordered 1,000 tons of fabricated steel for bridge and station repairs and renewals.

Miscellaneous

THE UNION PACIFIC has ordered three American ditchers from the American Hoist & Derrick Company.

THE JAPANESE GOVERNMENT RAILWAYS are in the market for 8,000 steel tired wheels and 8,000 steel tires for wheels of 33-inch diameter.

Signaling

THE PENNSYLVANIA RAILROAD has ordered a Saxby & Farmer interlocking machine from the Union Switch & Signal Company, Swissvale, Pa., for installation at Dolton, Ill.; 162 working levers and 10 spare spaces. This will be the largest Saxby & Farmer interlocking machine in the United States.

Supply Trade News

The Bradford Draft Gear Company has removed its New York office from 30 Church street, to suite 1018, 23 West 43rd street.

The Maher Engineering Company, Chicago, has opened a branch office at 708 Schofield Building, Cleveland, Ohio, in charge of **Lincoln D. Maher** as manager.

The **Pennsylvania Tank Car Company** and the **Pennsylvania Tank Line** have removed their New York office, from 50 Church street, to 25 West Forty-third street.

The Steel Sales Corporation, Chicago, has purchased 35 acres of land at South Crawford avenue and West Thirty-fifth street, Chicago, on which it plans to build a warehouse costing about $1,000,000.

J. C. Little, mechanical engineer of the Chicago & North Western, with headquarters at Chicago, has resigned to enter the service of **H. G. Doran & Co.,** Chicago representatives of the Schaefer Equipment Company, the Clark Car Company and the Mason Tanking Company, all of Pittsburgh, Pa.; Benson & Co., New York, and the Rivet Cutting Gun Company, Cincinnati, Ohio. Mr. Little was born at Dunkirk, N. Y., on August 20, 1871, and was educated at Stanford University, Palo Alto, Cal. He began railway work with the Brooks Locomotive Works, now a part of the American Locomotive Company. In March, 1903, he was appointed a draftsman on the Northern Pacific at St. Paul, Minn., and later was promoted to chief draftsman. In 1904, he was appointed chief draftsman on the Louisville & Nashville, with headquarters at Louisville, Ky., retaining that position until September, 1906, when he was appointed mechanical engineer of the Chicago & North Western.

J. C. Little

W. S. Atkinson, for many years purchasing agent for the Kansas City Southern, has been appointed manager of the railway sales department of the **Cook Paint & Varnish Company,** Kansas City, Mo.

J. F. Kroske, who served as a lieutenant with the Nineteenth Engineers during the war, has taken a position in the service department of the **Ingersoll-Rand Company,** New York, and is connected with its Pittsburgh office.

Leslie R. Pyle, supervisor of the Fuel Conservation section of the Division of Operation of the United States Railroad Administration, with office at Chicago, has been elected vice-president of the **Locomotive Firebox Company,** with the same headquarters.

The Pullman Company, which took on the building of automobile bodies for the Packard Motor Car Company, Detroit, Mich., several months ago, has decided to make this a permanent branch of its business and additions have been made to the plant to accommodate it.

The Mono Corporation of America, 48 Coal and Iron Exchange, Buffalo, N. Y., announces that it has bought the entire stock of Mono apparatus and accessories from the F. D. Harger Company, Buffalo, N. Y. This includes all rights for the manufacture and sale of various types of Mono apparatus for the automatic analysis of CO_2, CO, and other gases.

R. D. Eves, notice of whose appointment as manager of railroad sales at Cincinnati, Ohio, of the **Western Electric Company, Inc.,** Chicago, appeared in the *Railway Age* of March 5 (page 730), obtained his education at the Peabody College, Nashville, Tenn., and at the School of Railway Signaling, Utica, N. Y. On October 1, 1909, he began his business experience as a stenographer and general assistant to the sales manager of the Tennessee Milling Company, Estill Springs, Tenn. In 1911 he was a stenographer and general clerk in the local freight office of the Nashville, Chattanooga & St. Louis at Nashville, Tenn., and the following year, was appointed chief clerk. Later he was successively signal storekeeper and office assistant to the signal engineer of the same road, with the same headquarters, retaining the latter position until 1919, when he resigned to become connected with the railroad sales department of the Western Electric Company.

R. D. Eves

Frank C. Smink, formerly for 17 years president of the **Reading Iron Company,** Reading, Pa., died on March 3, of a complication of diseases, at his home in Reading, at the age of 74. After an early training with the Philadelphia & Reading Railway Company and in Reading banking circles, Mr. Smink, in 1878, entered the service of the Reading Iron Works, as business manager. He remained in that position until the organization of the Reading Iron Company in 1889, when he was made treasurer, and subsequently served as vice-president and general manaer under the presidency of the late George F. Baer, whom he succeeded in 1902. Mr. Smink was a director of the Reading Trust Company, also the Temple Iron Company, and for many years served as a member of the executive committee and a director of the Pennsylvania Steel Company, the Spanish-American Iron Company, the Maryland Steel Company, the Penn-Mary Coal Company, the Pure Oil Company, and other organizations.

F. C. Smink

W. W. Williams, general manager of the **Reading Iron Company,** Reading, Pa., has been elected vice-president in charge of sales and operation and **J. M. Callen,** second vice-president, has been elected vice-president in charge of purchases and distribution of materials. A portrait of Mr. Williams and a sketch of his career were published in the *Railway Age* of October 31, 1919, on page 899. The other officers re-elected at the annual meeting are: **L. E. Thomas,**

president; **G. W. Delaney,** secretary; **H. E. Yost,** treasurer; **R. J. Wenger,** assistant treasurer.

George H. Snyder has been appointed sales engineer, with headquarters at St. Paul, Minn., of the **American Steel Foundries,** Chicago. He entered the service of the store department of the Minneapolis, St. Paul & Sault Ste. Marie, as a clerk in 1905, and was promoted to chief clerk of the same department in 1909. He remained in that position until August 1, 1911, when he was transferred to the mechanical department and served as chief clerk under T. A. Fogue, general mechanical superintendent, until his new appointment with the American Steel Foundries.

B. G. Koether, who was appointed vice-president of the **Hyatt Roller Bearing Company,** Detroit, Mich., in entire charge of the company's sales and advertising departments, as was announced in the *Railway Age* of February 6, page 458, is at present located at Detroit, but will leave in a short time for Harrison, N. J., there to establish headquarters and take up his new duties. He entered the employ of the Hyatt Roller Bearing Company 18 years ago as accountant and in a short time was promoted to the position of purchasing agent. He was made assistant sales manager at Harrison, N. J., and in 1910 went to Detroit to assume the duties of sales manager. Later he became head of the motor bearings division and for several years has been a director of the company. Mr. Koether is a member of the Detroit Board of Commerce, Players Club, and the Detroit section of the Society of Automotive Engineers.

B. G. Koether

M. A. Buehler, formerly sales manager at the Omaha office of the **Western Electric Company,** New York, has been made sales manager at the Minneapolis office and **Eliot Lum** has been promoted to sales manager at the Omaha office, to succeed Mr. Buehler. Mr. Buehler joined the Western Electric Company's organization in the early part of 1915 and became sales manager at Omaha during the fall of 1917. Mr. Lum entered the employ of the Western Electric Company as a student in the educational courses in 1905, directly after his graduation from college. In 1907, he became a member of the telephone engineering department at Chicago, and in 1909, was transferred to the sales department of the Minneapolis house, joining the Omaha organization in the same capacity in the winter of 1912.

Colorado Fuel & Iron Company

The annual report of the Colorado Fuel & Iron Company for the year ended December 31, 1919, shows gross sales of $34,405,218, as compared with $48,233,575 in 1918. Operating expenses totaled $31,106,215 and net earnings were $3,299,003. There was income from other sources amounting to $426,053 and deductions were made of $2,686,915 for bond interest, taxes, real estate sinking funds, etc., and $1,615,786 for depreciation etc., leaving a debit balance to be carried to profit and loss of $577,646. Dividends on the common and preferred stock amounting to $1,186,993 were paid out of accomulated surplus.

J. F. Welborn, president of the company says in the report that "the outlook for the ensuing year is very encouraging. Contracts already made for rails will take practically the entire production of the rail mill for the ten months beginning March 1. The demands for other forms of steel are in excess of our output, with orders booked ahead for several months."

The Bucyrus Company

The annual report of the Bucyrus Company, South Milwaukee, Wis., for the year ending December 31, 1919, was made public on March 2, 1920. After deducting the amounts determined upon as necessary to pay all taxes, and after the usual charges, the net earnings of the company for the year were $982,563. During the early part of the year dividends on the preferred stock were continued at the rate of 1 per cent per quarter; but, beginning with the payment of October 1, the regular quarterly preferred dividends of 1¾ per cent were restored. Extensive additions to the machine tool equipment at the plant were made during the year and the entire program in this connection is about completed, the president announces. The general balance sheet follows in brief:

Assets.		Liabilities	
Cash	$249,483	Accounts payable	$355,403
Accts. and bills receivable	1,745,885	Advance payments rec'd.	53,342
Inventories	2,568,872	Pref. div. payable Jan. 2, 1920	70,000
Securities	235,237	Acc. taxes and sundry res.	606,693
Land, buildings, etc.	6,868,583	Capital stock—	
		Preferred	4,000,000
		Common	4,000,000
		Surplus	2,582,622
Total	$11,668,060	Total	$11,668,060

Automatic Straight Air Brake Company Starts Active Manufacturing

The Automatic Straight Air Brake Company announces that it has completed arrangements with Kidder, Peabody & Co., of New York and Boston, John F. Alvord, president of the Torrington Manufacturing Company and Hendee Manufacturing Company, and Geo. W. Goethals & Co., Inc., for the financing and manufacturing of its brakes. These three interests have purchased a controlling interest in the company and will immediately establish a plant for the manufacture of the brake.

S. G. Neal

John F. Alvord has been elected president. Harry I. Miller, who has been associated with the company from its inception will be vice-president in charge of sales. Harry B. Hunt, formerly of the engineering department of the American Locomotive Company and more recently a colonel in the Production Department of the Ordnance Bureau, has been elected vice-president and treasurer in charge of manufacturing. A. M. Trueb is secretary and auditor. Spencer G. Neal, the inventor of the brake, is the chief engineer.

The directors are as follows: John F. Alvord, William L. Benedict of Kidder, Peabody & Co.; Carl R. Ganter, of Shattuck, Glenn, Huse & Ganter; Robert E. Graham of George W. Goethals & Co., Inc.; Edward D. Kenna of New York; Harry I. Miller; James D. Mortimer, president of the North American Company; Morgan J. O'Brien of O'Brien, Boardman, Parker & Fox, and Robert Winsor of Kidder, Peabody & Co.

With this new organization the company will be prepared to enter upon the production of the automatic straight air brake on a large scale.

Spencer G. Neal, who is chief engineer of the company under its new organization, is the inventor of the automatic straight air brake and the man who has been in charge of its testing

and development. He was born at Humboldt, Kan., in 1883. His family moved to southern California when he was two years of age and he was educated in the public schools there. He entered railway service in 1898 and served as a machinist apprentice in the San Bernardino, Cal., shops of the Atchison, Topeka & Santa Fe. He then became a machinist and was for a time engaged in the installation of stationary machinery. Having then worked out the idea of the new brake he spent from 1910 to 1912 on lines now part of the San Diego & Eastern, on which road the first tests of the brake were made. In 1913, he continued these tests on the Arizona Eastern, working out its development by means of passenger train tests between Globe, N. Mex., and Bowie, Ariz. He also continued these tests on a rack at Los Angeles. He went to New York in 1914 and has had his headquarters in that city since with the exception of time spent on tests of the air brake on the Atchison, Topeka & Santa Fe at La Junta, Colo., and those on the Virginian more recently.

Western Electric Company Extensions

The Western Electric Company, to make possible its 1920 output of automatic switching apparatus, at its Hawthorne, Ill., plant, last year put up five new buildings, costing $1,700,000, and installed new machinery, tools, patterns, furniture and fixtures at a cost of $1,600,000. The company has decided to increase further the facilities at Hawthorne at a cost of $3,500,000 for new buildings, and $1,500,000 for tools, machinery, furniture, etc. This work includes three new six-story buildings with a total floor space of 277,640 sq. ft. to be added to the telephone apparatus group; an increase in warehouse facilities to the extent of a four-story addition which will provide a gross floor area of 150,000 sq. ft., and a new packing material factory to have 30,000 sq. ft. of floor space. Plans are now also being made to put up a new building in New York City on the block bounded by Hudson, Houston, Clarkson and Greenwich streets, where a nine-story reinforced concrete building, 200 ft. by 240 ft. will be built at a cost of $2,000,000. A new building is also being built in Savannah, Ga.; it will contain 20,000 sq. ft. of floor space. At Atlanta, Ga., a modern five-story concrete building is now under construction; it will have 50,000 sq. ft. of floor space and is expected to be completed by July. Work is under way in Cleveland, Ohio, on a four-story brick and concrete building to be 100 ft. by 140 ft. on the first floor and 90 ft. by 100 ft. on the other three floors, providing about 41,000 sq. ft. of floor space; this work is also expected to be finished by July. At Nashville, Tenn., a new supply warehouse was established on January 1 and plans are being made for putting up a new building in Minneapolis. A new wing to be 145 ft. by 126 ft. of brick construction will be built at the Emeryville, Cal., plant. Extensions are also to be built to the plants of the foreign associated companies in Paris, France, London or Woolwich, England, and Tokio, Japan.

Trade Publications

THE JORDAN SPREADER.—The O. F. Jordan Company, East Chicago, Ind., has issued a 24-page bulletin arranged in the form of a series of photographs, showing the Jordan Spreader in different positions with the different features operating so that the various functions of the machine may be readily understood. A number of the photographs show the spreader in operation and indicate the varied character of the work that may be done with it.

CHARCOAL IRON BOILER TUBES.—"A History of the Boiler Tube of Greatest Ultimate Economy" is the title of a book of 32 pages, 7¾ inches by 10½ inches in size, recently issued by the Parkesburg Iron Company, Parkesburg, Pa. This book covers the development of the charcoal iron tube from 1812 to date, and seeks to bring out by many actual examples the ultimate economy of boiler tubes of charcoal iron in locomotives, marine and stationary boilers. Thirty-one illustrations are shown, and a description is given both of the manufacture of Parkesburg skelp and Parkesburg charcoal iron boiler tubes. This book is more than usually well gotten up, and contains seven useful tables.

STEAM TABLES FOR CONDENSER WORK.—The Wheeler Condenser & Engineering Company, Carteret, N. J., has published the fifth edition of its handbook of steam tables. The booklet is of convenient size and is illustrated. It gives the properties of saturated steam from 29.8 in. vacuum to atmospheric pressure in increments of tenths of an inch, with pressures below atmosphere expressed in inches of mercury referred to a 30-in. barometer. A complete table is also given of the properties of saturated steam above atmospheric pressure, with constants and tables for correcting vacuum column and barometer readings, such as thermal expansion of mercury, relative expansion of mercury and brass scale, etc.

Obituary

Patrick Henry Ferguson, for the past 14 years manager of the New York office of the **Pittsburgh Steel Products Company,** Pittsburgh, Pa., died on February 11 while on a business trip to Richmond, Va. Mr. Ferguson was born at Ottawa, Ill., on March 12, 1876, and was educated in the public and high schools and afterward studied law in Ottawa. He traveled for the Shelby Steel Company for several years and later became manager of the tube department of Peter A. Frasee & Co., New York. He had served since 1906 as manager of the New York office of the Pittsburgh Steel Products Company.

James J. Flannery, widely known in industrial and financial circles, died suddenly at his home in Pittsburgh on March 6 at the age of 66. Mr. Flannery had been in poor health for over a year, but had been active in his business affairs up to the day of his death. He was the organizer and executive head of the Flannery Bolt Company, Pittsburgh, Pa., manufacturers of the Tate flexible staybolt. He also, with his brother, Joseph M. Flannery, who died on February 18 (see *Railway Age*, February 27, page 653), organized the American Vanadium Company, of which he was president from the beginning. At the time Mr. Flannery organized the American Vanadium Company, vanadium was a semi-rare and little known metal whose industrial application had received little consideration. Mr. Flannery and his brother obtained control of an enormous deposit of vanadium ore in the Andes of Peru, and successfully introduced its application in the manufacture of alloy steel, especially for automobile construction and certain locomotive parts, as frames, driving axles, connecting and piston rods and ordnance and armor. When Mr. Flannery, a few months ago, sold the American Vanadium Company to the Vanadium Corporation of America, controlled by Charles M. Schwab and J. Leonard Repogle, he controlled about 90 per cent of the world's supply of vanadium, principally through the Peruvian deposits originally purchased. Mr. Flannery was also interested in coal mining and was president of the Meadowlands Coal Company and the Montour & Lake Erie Coal Company. He was also a director in the Wharton Steel Company.

James J. Flannery

RAILROAD REVENUES as they stand are wholly inadequate to meet the new schedule of charges against them. To put this burden, largely of government origin, on the shoulders of private owners without making proper provision for relief would be shocking injustice to every holder of railroad securities and would invite nation-wide disaster.—*Chicago Journal.*

Financial and Construction

Railway Financial News

PENNSYLVANIA.—This railroad company, now the owner of over 77 per cent of the $84,860,111 outstanding capital stock of the Pittsburgh, Cincinnati, Chicago & St. Louis, offers to purchase the minority interest in the stock of the Pittsburgh, Cincinnati, Chicago & St. Louis. It will purchase the 192,929 minority shares and will pay for the same, par for par, in new 50-year 5 per cent mortgage bonds of the Pittsburgh, Cincinnati, Chicago & St. Louis Company. In other words, a $1,000 Pittsburgh, Cincinnati, Chicago & St. Louis bond will be given for each 10 shares of the company's minority stock now paying 4 per cent. Non-interest bearing scrip will be issued for from one to nine shares deposited, which scrip will be convertible into bonds when presented in sums of $1,000. The principal and interest of these bonds will be guaranteed by the Pennsylvania Railroad Company.

A circular issued to the stockholders says: "Owing to the general financial conditions and its narrow margin of profits, it has been impossible for the Pittsburgh, Cincinnati, Chicago & St. Louis to finance itself through satisfactory sale of its stock or securities, so that to meet its requirements for additions, extensions, equipment and other capital expenditures, the Pennsylvania company—wholly owned by the Pennsylvania Railroad Company—has in the past been obliged to purchase issues of capital stock to which the minority stockholders did not, except to a very limited amount, subscribe, and has also from time to time loaned the Pittsburgh, Cincinnati, Chicago & St. Louis necessary funds, taking as security therefor the temporary obligations of the borrowing company."

The dividend on the capital stock (only one class) of the Pittsburgh, Cincinnati, Chicago & St. Louis Company is now at the rate of 4 per cent per annum, and with the foregoing improvement program and its present debt, there is no promise of an increase unless its earnings and profits can be materially increased.

Holders of the Pittsburgh, Cincinnati, Chicago & St. Louis minority stock are asked to deposit their holdings under the proposed plan before May 1, with the treasurer of the Pennsylvania company. In the event of an exchange they will be entitled to the semi-annual dividend, payable in July, and the new bonds will bear interest from July 1, 1920.

SOUTHERN.—President Fairfax Harrison has announced that this system would not accept the government guarantee. This decision applies also to the subsidiary roads of the Southern system, the Cincinnati, New Orleans & Texas Pacific, the Alabama Great Southern, and the New Orleans & Northeastern.

Railway Construction

ERIE.—Plans and specifications are being prepared by the Strauss Bascule Bridge Company, Chicago, for a 180-ft, single-leaf, double-track bridge over the Passaic river at Newark, N. J.

J. W. WELLS LUMBER COMPANY.—As soon as the weather permits, the J. W. Wells Lumber Company, Menominee, Mich., will begin the construction of a logging railroad from a point on the main line of the Chicago, Milwaukee & St. Paul midway between Sagola, Mich., and Carey, and extending 11 miles toward Metropolitan, Mich. The company is dismantling its old logging railroad in Marinette County.

NEW YORK CENTRAL.—Contracts have been let for building 13 additional stories on the mail and express building, between Forty-fifth and Forty-sixth streets on Lexington avenue, New York, as follows: to the Phoenix Bridge Company for furnishing the steel; to the Terry & Tench Company, Inc., for erecting the steel, and to James Stewart & Co., Inc., for the general construction of the building exclusive of the steel. It is expected that the steel will arrive during June and that construction of the building will then be started; and that it will be completed early in 1921.

Railway Officers

Executive

Charles A. Phelan, recently appointed general manager for the receiver of the Missouri & North Arkansas, as announced in the *Railway Age* of February 13 (page 516), has since also been appointed receiver succeeding **Festus J. Wade,** resigned, effective March 6.

Financial, Legal and Accounting

D. F. Lyons, prior to federal control, assistant general counsel on the Northern Pacific, with headquarters at St. Paul, Minn., and during federal control general solicitor, has been reappointed to the latter position, effective March 1.

Operating

C. L. Hinkle, general superintendent of the Toledo, St. Louis & Western, with headquarters at Frankfort, Ind., has resigned.

L. F. Newton has been discharged from government service and has resumed his duties as assistant to the general superintendent on the Northern Pacific, with headquarters at Tacoma, Wash., succeeding **J. F. Alsit,** who has been assigned to other duties.

John E. Burrell, chief passenger clerk of the Western Pennsylvania division of the Pennsylvania during federal control, and prior to federal control chief clerk in the office of the general superintendent of the same division, who has been appointed superintendent of passenger transportation of the Eastern region of the same road, effective March 1, was born on August 21, 1874, at Port Washington, Ohio. He attended the public schools of Port Washington until the age of fifteen, when he began work as a telegraph operator for the Pittsburgh, Cincinnati, Chicago & St. Louis. He served as telegraph operator until January 11, 1902, when he was promoted to extra train despatcher, being later appointed in March of the same year chief clerk to the assistant trainmaster. On December 6, 1902, he was appointed interchange director of the Pittsburgh terminal and on June 1, 1903, became chief clerk to the general agent at Pittsburgh. He was made chief clerk to the general superintendent of the Western Pennsylvania division on April 1, 1907, and on January 16, 1918, was appointed chief passenger clerk of the same division.

John E. Burrell

J. F. Alsip, assistant to the general superintendent of the Northern Pacific, with headquarters at Tacoma, Wash., has been appointed trainmaster of the Tacoma division, with the same headquarters, succeeding **James A. Campbell,** transferred, effective March 1.

W. G. Brobeck, superintendent of terminals of the Chesapeake & Ohio, with headquarters at Ashland, Ky., has been appointed general superintendent in charge of operation of the Ashland Coal & Iron Railway, with the same headquarters, effective March 1.

P. L. McManus, operating assistant to the district director of the Ohio-Indiana district of the Eastern region of the United States Railroad Administration, with headquarters at Cincinnati, Ohio, has been appointed general superintendent of the Evansville & Indianapolis, with office at Terre Haute, Ind.

Robert E. Woodruff, general superintendent of the Erie, Lines West, with headquarters at Youngstown, Ohio, during federal control, and prior to federal control superintendent of transportation, who has been appointed manager of the Hornell region of the same road, with headquarters at Hornell, N. Y., was born in Green Bay, Wis. He graduated from Perdue University in civil engineering, in 1905. He began railroad work as a section laborer on the Erie at Warren, Ohio, and subsequently became track foreman, inspector of construction and assistant division engineer. From November, 1906, until December, 1908, he was division engineer at Meadville, Pa. Having been appointed trainmaster at Galion, Ohio, in December, 1908, he retained that position until March, 1909, when he became general agent of the Chicago Terminal division. He was appointed superintendent, with headquarters at Rochester, N. Y., in December, 1910, and on May 15, 1912, he was transferred in the same capacity to Marion, Ohio. In November, 1916, he was transferred to Youngstown. On November 1, 1917, he was appointed superintendent of transportation, with the same headquarters. He was promoted to general superintendent on June 15, 1918.

R. E. Woodruff

Edwin H. Buhlman, superintendent of the Meadville division of the Erie, with headquarters at Meadville, Pa., during federal control and trainmaster with the same headquarters prior to federal control, who has been appointed superintendent of transportation of the Hornell region of the same road, was born in Kingston, N. Y., on March 31, 1890. Having been graduated from high school and business college, he began railroad work on August 25, 1907, as timekeeper in the Susquehanna shops of the Erie. In September of the same year he became clerk and stenographer in the office of the trainmaster at the same place. He held that position until April 2, 1908, when he was transferred to Hornell, N. Y., in the same capacity. On January 1, 1909, he was appointed secretary to the general mechanical superintendent at New York. From April 1, 1909, until December 31, 1913, he filled various clerical positions in the office of the general superintendent at the same place. On January 1, 1914, he was appointed chief clerk to the general manager of the Lines West with headquarters at Cleveland, Ohio. He retained that position until December 1, 1915, when he was promoted to trainmaster of the Marion division, with headquarters at Huntington, Ind. On June 30, 1918, he was transferred to Meadville, Pa., and promoted to superintendent of the Meadville division in July, 1918.

E. H. Buhlman

C. E. Hair, prior to federal control, assistant general superintendent of the Chicago, Terre Haute & Southeastern, with office at Chicago, and more recently office manager for the regional director of the Central Western region, has been appointed general superintendent of the Chicago, Terre Haute & Southeastern, with the same headquarters, succeeding **O. S. Jackson,** resigned.

J. O. Hackenberg, principal assistant engineer of the Southern division of the Pennsylvania, Eastern Lines, who has been appointed superintendent of the Schuylkill division, with headquarters at Reading, Pa., was born in Milton, Pa., February 25, 1878. He graduated from Bucknell University. He entered the service of the Pennsylvania, May 21, 1900, as rodman on the Cambria and Clearfield division, at Cresson, Pa. The following year he was transferred to the chief engineer's department as levelman and was engaged on the South Side track elevation on the Monongahela division. On May 15, 1902, he was advanced to transitman in the office of the principal assistant engineer at Altoona, Pa. On March 1, 1903, Mr. Hackenberg was promoted to assistant supervisor at Millersburg, Pa., and on January 15, 1904, was transferred to the main line as assistant supervisor on the Middle division. He was promoted to supervisor on the Allegheny division September 1, 1905; transferred to supervisor on the Baltimore division December 1, 1908, and returned to the main line on June 16, 1913, as supervisor on the Pittsburgh division at East Liberty, Pa. He was made division engineer of the Allegheny division, with office at Oil City, Pa., on April 15, 1917. The following October he was transferred to the Maryland division in a similar capacity, and on October 20, 1919, was advanced to principal assistant engineer of the Southern division, with headquarters at Wilmington, Del.

J. O. Hackenberg

Traffic

R. R. Helstrom has been appointed general agent of the Carolina, Clinchfield & Ohio, with office at Chicago.

James A. Flanders, Jr., has been appointed general agent of the Delaware & Hudson, with headquarters at Chicago.

E. J. Brown has been appointed general freight agent of the Ocilla Southern with headquarters at Fitzgerald, Ga., effective March 1.

Benjamin F. Coons has been appointed general agent of the Chicago, Rock Island & Pacific, with headquarters at Los Angeles, Cal., effective March 5.

Matt Lucy, assistant engineer on the Missouri Pacific, with office at St. Louis, Mo., has been appointed industrial commissioner, with the same headquarters.

William Phillips has been appointed European manager of the Canadian National Railways and the Canadian Government Merchant Marine Limited with headquarters in London, Eng., effective March 1.

Theodore Harte, division freight and passenger agent of the Western Pacific, with headquarters at Salt Lake City, Utah.

has been appointed assistant general freight agent, with headquarters at San Francisco, Cal.

H. L. Traber, vice-president and general manager of the Okmulgee Northern, with office at Miami, Okla., has been appointed traffic manager of the Kansas, Oklahoma & Gulf, formerly the Missouri, Oklahoma & Gulf, with headquarters at Muskogee, Okla.

Henry W. Beyers, whose promotion to freight traffic manager of the Chicago & North Western, with headquarters at Chicago, was announced in the *Railway Age* of March 5, (page 740) was born at Toledo, Ohio, on March 26, 1870. After graduating from a local business college he entered railway service on August 1, 1883, as a clerk in the Chicago office of the Chicago & North Western. In 1891 he was appointed general agent at Cleveland, Ohio, being transferred in 1896 to Philadelphia, Pa., and in 1900 to Chicago. He was promoted to assistant general freight agent at Chicago in 1906, retaining that position until 1915, when he was appointed assistant traffic manager, retaining that position until March 1, 1920, when he was promoted to his present position.

Henry W. Beyers

J. S. Bock has been appointed general agent of the freight department of the Minneapolis & St. Louis, with headquarters at Spokane, Wash. **T. J. Pewters** has been appointed commercial agent at Minnesota Transfer, Minn. Both appointments became effective March 1.

John L. Ferguson, whose appointment as general passenger agent of the Chicago & North Western, with headquarters at Chicago, was announced in the *Railway Age* of March 5 (page 720), has been in the service of that road for 45 years. He was born in Henry County, Ky., on August 23, 1853, and after completing a common school education, entered railroad service in 1870, with the North Missouri, now part of the Wabash. He became connected with the Chicago & North Western in 1875 as a ticket clerk and has since been successively city passenger agent and city passenger and ticket agent at Milwaukee, Wis., and city passenger agent at Chicago. During government control he was assistant general passenger agent at Chicago. He succeeds C. A. Cairns, whose promotion to passenger traffic manager was announced in the *Railway Age* of March 5, (page 740).

John L. Ferguson

Coincident with the appointment of **W. A. Terry** as freight traffic manager on the New York Central, with office at Chicago, a notice of which appeared in the *Railway Age* of March 5, page 745, the position of assistant freight traffic manager at Chicago, held by Mr. Terry prior to his recent appointment, was abolished.

E. A. Niel, coal freight agent of the Buffalo, Rochester & Pittsburgh, with headquarters at Rochester, N. Y., has been appointed general freight agent with the same headquarters, and the office of coal freight agent has been consolidated with that of general freight agent. **H. C. Watson** and **G. A. Bowman** have been appointed assistant general freight agents, with headquarters at Pittsburgh, Pa., and Buffalo, N. Y., respectively. **J. F. Hamilton** has been appointed chief of tariff bureau at Rochester. These appointments became effective March 10.

George A. Cullen, whose resignation from the position of passenger traffic manager of the Delaware, Lackawanna & Western, and whose election to the vice-presidency of the North American Fruit Exchange was noted in last week's issue, has been with the Lackawanna since 1900. He was born at St. Louis, Mo., and began railway work with the Wabash. He later served as a rate clerk on the Missouri Pacific and in 1895 was appointed chief rate clerk and rate sheet compiler of the Southern Passenger Association at Atlanta, Ga. In 1896, he was appointed chief clerk in the passenger department of the Plant System at Savannah, Ga., and later in the same year chief clerk of the Western Passenger Association with headquarters at Chicago. In 1898, he was appointed general agent of the same association in charge of the immigration bureau at New York. He continued in this capacity until 1900 when he became associated with the Delaware, Lackawanna & Western as general western passenger agent at Chicago. He was appointed general passenger agent with headquarters at New York in 1906 and in 1911 was promoted to passenger traffic manager. Mr. Cullen has served as director of agricultural development of the Lackawanna, and in that capacity was one of the three co-founders of the Country Farm Bureau System in America which now has a membership of over one million farmers and is recognized as the most effective method ever devised for getting the farmers to work together under scientific direction and practical business management. Mr. Cullen served during the war as the chief of a section of the United States Food Administration in Washington and organized for the churches of America—Protestant, Catholic and Jewish as well as the fraternal and benevolent societies of the country for systematic food conservation. As United States Railroad Administration executive in charge of consolidated ticket offices, Mr. Cullen is chiefly responsible for the general plan on which they have been planned and operated in the larger cities of the country. Mr. Cullen takes up his new duties as vice-president of the North American Fruit Exchange on April 1 and will have his headquarters at 90 West street, New York.

Geo. A. Cullen

Engineering, Maintenance of Ways and Signaling

R. J. Gammie has been appointed assistant engineer, Fort Worth division of the Texas & Pacific, with headquarters at Fort Worth, Tex., succeeding **E. H. McIlheran,** resigned, effective March 1.

A. R. Raymer, assistant chief engineer of the Pittsburgh & Lake Erie, with headquarters at Pittsburgh, Pa., has been appointed chief engineer, with the same headquarters, succeeding **John A. Atwood,** deceased.

Pusey Jones, who has been appointed bridge engineer of of the Boston & Maine, with headquarters at Boston, Mass., as noted in the *Railway Age* of March 12, page 801, was born at Wilmington, Del., in July, 1880. He graduated from the

Delaware State College in 1902 and entered the employ of the Philadelphia, Baltimore & Washington, where he remained until April, 1903, when he left railroad service to engage in industrial work for two years. In 1905 he went with the New York, Westchester & Boston as structural draftsman, and in 1910 he was made assistant structural engineer. From July, 1912, to April, 1914, he was with the Georgia Coast & Piedmont as principal assistant engineer at Brunswick, Ga., and later became chief engineer on design and construction of several bridges and buildings. In 1914 he engaged in private practice in Savannah and in 1916 went with the Boston & Maine as first chief draftsman. During the war he was appointed second acting engineer of structures, from which position he was appointed bridge engineer as mentioned above.

George M. Huss, who has been assistant engineer of the Division of Capital Expenditures of the Railroad Administration, has been appointed chairman of the committee on claims, organized by the Division of Liquidation Claims, which is to have charge of the investigation of all claims under the sections of the contracts between the Railroad Administration and the carriers relating to upkeep and capital expenditures. These claims involve the questions as to whether or not the government owes the carrier for deferred maintenance, and the amount, whether expenditures are properly chargeable to maintenance or to capital account, whether capital expenditures are properly chargeable to the government as a war cost or to the carrier, or as to how they shall be divided between carriers in the case of expenditures in connection with unification. The membership of the committee was announced in last week's issue. Mr. Huss has acted as assistant engineer of the Division of Capital Expenditures since July 1, 1918, in charge of the physical progress of construction work during federal control. He was born at Tiffin, Ohio, in 1859, was educated at Cornell University, entered railroad construction service on the Wabash in 1880, and has continued as builder and engineer to the present time. He has had charge of the construction of many important lines in this country, including portions of the Atchison, Topeka & Santa Fe, Chicago & Eastern Illinois, Chicago & Grand Trunk, Northern Pacific, and Wisconsin Central. From 1890 to 1893 he was chief engineer and builder of the original line of the Deming, Sierra Madre & Pacific, now occupied partly by the Mexican Northwestern, and partly by the Kansas City, Mexico & Orient. From 1894 to 1896 he was chief engineer and builder of the Syria Ottoman Railway from Haifa on the Mediterranean coast to Damascus. This road was one of the German strategic lines in Palestine, and was the base railway of the Turko-German forces after General Allenby drove them north from Jerusalem. From 1908 to 1918 Mr. Huss was construction engineer of the Minneapolis, St. Paul & Sault Ste. Marie, locating over 1,200 miles for that company, and building 600 miles.

G. M. Huss

Mechanical

G. Dempster has been appointed master mechanic of the Southern Railway in Mississippi at Columbus, Miss., effective March 1.

Robert Collet, assistant manager of the Fuel Conservation section of the Railroad Administration, during federal control, has been appointed superintendent of fuel and locomotive performance of the New York Central.

P. F. Smith, Jr., who has been appointed works manager of the Pennsylvania Railroad at Altoona, Pa., under that railroads' new plan of organization, was formerly general superintendent of motive power of the Pennsylvania Lines West, with headquarters at Pittsburgh. Mr. Smith was born on August 1, 1870. After graduating from Warralls Technical Academy in June, 1887, he was employed by the Pennsylvania as an apprentice in the shops at Altoona, Pa. After several minor promotions he was appointed assistant road foreman of engines on the Pittsburgh division in February, 1892. On February 1, 1895, he was appointed assistant master mechanic at the Fort Wayne, Ind., shops and in November, 1896, was promoted to the position of master mechanic of the Crestline, Ohio, shops and the Toledo division. From January 1, 1900, to December 31, 1911, he was master mechanic at several shops of the Pittsburgh, Cincinnati, Chicago & St. Louis and on January 1, 1912, became superintendent of motive power of the Central system, Pennsylvania Lines West, which position he held until January, 1917, when he was appointed general superintendet of motive power of the Lines West. As works manager of the Altoona shops, Mr. Smith reports directly to the chief of motive power, with the authority and responsibility that the manager of an industrial manufacturing plant would have.

J. F. Smith, Jr.

Charles James, mechanical superintendent of the Erie, Lines West, with headquarters at Youngstown, Ohio, during and prior to federal control, who has been appointed mechanical superintendent of the Hornell region of the same road, with headquarters at Hornell, N. Y., effective March 1, was born in Elkhart, Ind., on October 7, 1866. He received a high school education and entered the employ of the Lake Shore & Michigan Southern, now part of the New York Central, on September 21, 1880, as machinist's apprentice, at Elkhart. He was made a machinist on May 1, 1886, and on December 18, 1890, became roundhouse and shop foreman of the Erie, at Huntington, Ind. In December, 1900, he was transferred to Chicago as general foreman. He remained there until 1902, when he returned to Huntington in the same capacity. In 1903, he was general foreman at Hornell, and from 1904 until 1906 at Port Jervis, N. Y. On October 1, 1906, he was appointed master mechanic of the Rochester division at Avon, N. Y., and was transferred in the same capacity to the Cincinnati division, with headquarters at Galion, Ohio, on December 1 of the same year. While serving as master mechanic he was transferred to the Delaware division in 1907, and to the New York division in 1910, where he remained until September 1, 1914. On the latter date he was appointed mechanical superintendent, with headquarters at Youngstown, Ohio.

Charles James

W. C. A. Henry, superintendent of motive power of the Southwest system of the Pennsylvania, Lines West, with headquarters at Columbus, Ohio, who has been appointed general superintendent of motive power of the Southwestern region of the same road, with headquarters at St. Louis, Mo., was born on October 13, 1873, at Stapleton, Staten Island, N. Y. He was educated at the Brooklyn Polytechnic Institute, and began railroad work as a special machinist's apprentice in the Altoona shops of the Pennsylvania on March 2, 1891. On June 1, 1897, he was appointed acting foreman of car inspectors of the Pittsburgh division, serving afterwards as assistant road foreman of engines, assistant general foreman of the car shops at Altoona, and assistant engineer of motive power, respectively, until July, 1903, when he was promoted to master mechanic at Wellsville, Ohio. He was transferred to Columbus, Ohio, on May 1, 1906, and became superintendent of motive power of the Southwest system in September, 1906.

W. C. A. Henry

J. M. Henry, assistant general superintendent of motive power of the Pennsylvania Railroad with headquarters at Altoona, Pa., who has been appointed general superintendent of motive power of the Eastern region of the same road with headquarters at Philadelphia, was born on October 10, 1873. He entered the service of the Pennsylvania as a special apprentice in the Altoona shops on May 5, 1889, and served as an apprentice until September 1, 1896, when he entered Purdue University, being furloughed from the shops during the school term each year. He was graduated in June, 1900, and then became a special apprentice in the office of the assistant engineer of motive power at Altoona. A year later he was promoted to motive power inspector at Altoona, and in February, 1902, was made assistant engineer of motive power of the Erie division of the Pennsylvania and of the Northern Central at Williamsport, Pa. From July 1, 1903, to December, 1913, he was master mechanic at various shops. On the latter date he was promoted to superintendent of motive power of the Western Pennsylvania division, and on May 1, 1916, was transferred to the operating department as assistant superintendent of the Pittsburgh division, being transferred on April 15, 1917, to the New York division. He was appointed assistant general superintendent of motive power at Altoona, in the latter part of 1917.

J. M. Henry

Special

T. T. Maxey, assistant in the division of public service of the United States Railroad Administration, with headquarters at Washington, D. C., has been appointed general advertising agent of the Chicago, Burlington & Quincy, with headquarters at Chicago, the position he held prior to federal control.

E. C. Conners, of the construction department of the Alaskan Engineering Commission, has been appointed assistant superintendent of construction in the telegraph and telephone department, with headquarters at Anchorage, Alaska.

General

BELT RAILWAY OF CHICAGO

A portion of the new organization of the Belt Railway of Chicago was given in the *Railway Age* of February 27, page 657. The new organization is given in complete form as follows:

H. G. Hetzler	President	Chicago.
E. H. Lee	Vice-pres. and gen. mgr.	"
C. G. Austin	General counsel	"
R. L. Porter	Auditor and secretary	"
F. A. Spink	Traffic manager	"
F. E. Morrow	Chief engineer	"
J. E. Murphy	Treasurer	"
C. W. Yeamans	Purchasing and supply agt.	"
J. H. Brinkerhoff	General superintendent	"
C. A. Inman	Real est. and ind. agent	"
J. R. Barse	General attorney	"
R. H. Johnson	Personal inj. claim agent	"
O. N. Goldsmith	Freight claim agent	"
E. D. Swift	Engineer, maint. of way	"
G. H. Shreeve	Superintendent	Clearing, Ill.
F. J. Wasson	Acting car accountant	"
E. F. Jones	Master mechanc	"
A. S. Sternburg	General car foreman	"
J. C. Fielding	Chief special agent	"
Dr. W. H. Bohart	Chief surgeon	Chicago.

BUFFALO & SUSQUEHANNA

The new organization of the Buffalo & Susquehanna is announced as follows:

E. R. Darlow,	President	Buffalo, N. Y.
A. M. Darlow	General manager	Wellsville, N. Y.
F. E. Hall	Secretary and treasurer	Buffalo, N. Y.
T. J. Elmer	General auditor	"
W. L. McGuigan	Auditor	Wellsville, N. Y.
V. J. Estabrook	Assistant treasurer	"
E. M. Meagher	Gen. frt and pass. agent	"
E. J. Urtel	Purchasing agent	"
G. D. Reynard	Superintendent	Galeton, Pa.
G. A. Clark	Supt. of car service	"
T. H. Nanney	Master mechanic	"

CHICAGO, BURLINGTON & QUINCY

In addition to the elections and appointments on the Chicago, Burlington & Quincy announced in the *Railway Age* of February 27, page 660, the following appointments have been made, effective March 1:

W. J. Jarvis	Assistant secretary	Chicago.
W. J. Fabian	Assistant treasurer	"
F. S. Bagg	Transfer agent	"

E. A. Bernholz has been appointed transfer agent at New York in place of M. H. Niles. The State Street Trust Company, Boston, Mass., has been appointed fiscal agent and transfer agent.

CHICAGO, MILWAUKEE & ST. PAUL

In addition to appointments on the Chicago, Milwaukee & St. Paul, noted in the *Railway Age* of March 5, page 739, the following appointments have been made in the traffic department:

H. E. Pierpont	Traffic manager	Chicago.

Freight Department

J. R. Veitch	Assistant traffic manager	Seattle, Wash.
C. A. Lahey	General freight agent	Chicago.
T. W. Proctor	First asst. gen. freight agt.	"
E. B. Finegan	Assistant gen. freight agent.	"
A. A. Wilson	Assistant gen. freight agent.	"
E. W. Soergel	Assistant gen. freight agent.	"
J. M. Davis	Assistant gen. freight agent.	Milwaukee, Wis.
C. L. Kennedy	Assistant gen. freight agent.	Minneapolis, Minn.
R. C. Sanders	Chief of tariff bureau	Chicago.
G. E. Stolp	Oriental freight agent	"
F. J. Calkins	Export and import agent	Seattle, Wash.

Chicago, Milwaukee & St. Paul (Continued)

Passenger Department

Geo. B. Haynes..General passenger agent...Chicago.
W. B. Dixon....Asst. general passenger agt. "
W. J. Cannon...Asst. general passenger agt. "
A. P. Chapman, Jr.Asst. general passenger agt. Seattle, Wash.
Jos. Caldwell.....Asst. general passenger agt. Chicago.
F. W. Getty.....Supt. sleeping & dining cars. "
H. F. Hunter....Supervisor of agriculture.. "
W. D. Carrick....General baggage agent....Milwaukee, Wis.

Traffic Department Agencies

O. F. Waller....Div. frt. and pass. agent..Aberdeen, S. Dak.
H. G. Selby.....General agent.....Bellingham, Wash.
A. L. Eidemiller..General agent.....Boston, Mass.
P. J. Peckens...Div. frt. and pass. agent..Butte, Mont.
J. H. Skillen....General agent.....Chicago.
F. N. Hicks.....General agent pass. dept.. "
Grant Williams...Div. freight agent..... "
B. O. Searles....General agent.....Cincinnati, Ohio.
F. E. Clark.....General agent.....Cleveland, Ohio.
M. F. Smith.....General agent.....Dallas, Tex.
A. Mallum.....General agent.....Davenport, Iowa.
M. H. McEwen..General agent.....Denver, Col.
C. E. Hilliker....Division frt. and pass agent. Des Moines, Iowa.
H. W. Warren...District passenger agent.... "
H. W. Steinhoff..General agent.....Detroit, Mich.
O. T. Cull.....Div. frt. and pass. agent..Dubuque, Iowa.
G. M. Bowman..General agent.....Duluth, Minn.
H. R. Wahoske..Div. frt. and pass. agent..Great Falls, Mont.
H. E. Stewart...Div. frt. and pass. agent..Green Bay, Wis.
J. S. Adsit.....General agent.....Kansas City, Mo.
E. G. Woodward.General agent pass. dept.. "
H. W. Porter....General agent.....Los Angeles, Cal.
W. W. Winton..District passenger agent...Madison, Wis.
W. F. Cody.....Div. frt. and pass. agent..Mason City, Iowa.
J. J. Foley.....Div. frt. and pass. agent..Miles City, Mont.
J. G. Love.....General agent.....Milwaukee, Wis.
W. J. Cavanaugh.Commercial agent..... "
E. G. Hayden....Gen. agent pass. dept..... "
A. S. Willoughby.Division freight agent.....Minneapolis, Minn.
J. W. Stevenson..Commercial agent..... "
W. H. Rogers....General agent.....New Orleans, La.
C. H. Mitchell...General agent.....New York City.
G. L. Cobb.....Gen. agent pass. dept.. ... "
E. Duvall .....General agent.....Omaha, Neb.
W. E. Bock.....District passenger agent... "
Geo. J. Lincoln...General agent.....Philadelphia, Pa.
T. P. Casey.....General agent.....Pittsburgh, Pa.
R. L. Ford.....General agent.....Portland, Ore.
C. J. Peterson...General agent.....St. Louis, Mo.
L. M. Jones.....Gen. agent pass. dept.....St. Paul, Minn.
D. M. McGeen...Commercial agent..... "
C. S. Williams...General agent.....S. Lake City, Utah
E. K. Garrison...General agent.....San Francisco, Cal.
C. H. Miles.....Gen. agent pass dept..... "
A. J. Hillman...General agent.....Seattle, Wash.
R. F. Weeks.....District freight agent..... "
C. N. Curtis.....Div. frt. and pass. agent...Sioux City, Iowa.
W. P. Warner...Div. frt. and pass. agent...Spokane, Wash.
E. A. Lalk.....Div. frt. and pass. agent...Tacoma, Wash.
G. W. Hibbard..General agent.....Vancouver, B. C.
F. O. Finn.....General agent.....Victoria, B. C.

CHICAGO & WESTERN INDIANA

A portion of the new organization of the Chicago & Western Indiana was given in the *Railway Age* of February 27, page 657. The new organization is given in complete form as follows:

H. G. Hetzler...President .....Chicago.
E. H. Lee.....Vice-pres. and gen. mgr.. "
C. G. Austin.....General counsel..... "
R. L. Porter.....Auditor and secretary..... "
F. A. Spink.....Traffic manager..... "
F. E. Morrow....Chief engineer..... "
J. E. Murphy....Treasurer ..... "
C. W. Yeamans..Purchasing and sup. agent. "
R. W. Stevens...General superintendent.... "
C. A. Inman....Real est. and ind. agent... "
J. R. Barse.....General attorney..... "
R. H. Johnson...Personal injury claim agent. "
O. N. Goldsmith.Freight claim agent..... "
V. R. Walling...Principal asst. engineer.... "
J. B. Middaugh..Superintendent ..... "
F. E. Jacob.....Signal engineer ..... "
J. J. Carroll.....General baggage agent.... "
N. B. Whitsel....Master mechanic..... "
G. N. Saum.....General car foreman.....Chicago
J. B. McDonald..Chief special agent..... "
Dr. F. A. Lofton.Chief surgeon..... "

CHICAGO, ROCK ISLAND & PACIFIC

The following appointments have been announced in the freight and passenger departments of the Chicago, Rock Island & Pacific, effective March 1:

G. F. Ramspacher.General agent.....Philadelphia, Pa.
G. W. Williams..General agent, frt. dept..Detroit, Mich.
S. L. Parrott....General agent, frt. dept..New York.
L. C. Ivory.....Asst. gen. agent, frt. dept. "
J. G. Doolittle...General agent.....S. Lake City, Utah

CINCINNATI, INDIANAPOLIS & WESTERN

The following officers have been elected or appointed on the Cincinnati, Indianapolis & Western in addition to those whose appointments were noted in the *Railway Age* of March 5, page 740:

B. A. Worthington President .....Indianapolis, Ind.
F. H. Ecker.....Vice-president.....New York.
H. F. Whitcomb..Member Executive Com...Milwaukee, Wis.
John H. Hammond Vice-president.....New York.
Cadwalader, Wickersham & Taft.General counsel..... "
J. G. Thomas....Assistant to president.....Indianapolis, Ind.
H. Lewis.....Manager, purchases & sup.. "
F. L. Truitt.....Chief surgeon..... "
R. B. Kinkaid...Asst. gen. freight agent.. "
L. B. Jay.....General passenger agent.. "

In the item in the *Railway Age* of March 5, page 740, the title of F. B. Brown was incorrectly given as freight claim agent. Mr. Brown should have been given as general auditor. His headquarters are at Indianapolis, Ind.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS

The executive organization of the New York Central Lines was given in the *Railway Age* of February 27, page 659. The following will give the local organization of the Cleveland, Cincinnati, Chicago & St. Louis and also of the Cincinnati Northern and the Kankakee & Seneca:

H. A. Worcester. Vice-president.....Cincinnati, O.
E. M. Costin....General manager..... "
L. S. Rose.....Asst. to general manager.. "
H. McVeagh.....Asst. to general manager.. "
W. J. Hiner.....Purchasing agent..... "
L. J. Hackney...General counsel..... "
M. S. Barger.....General treasurer.....New York.
Rush N. Harry..Treasurer .....Cincinnati, O.
W. C. Wishart...Comptroller .....New York.
J. C. Wallace....Auditor .....Cincinnati, O.
R. F. Davies....Assistant auditor..... "
W. T. Stevenson.Traffic manager..... "
Geo. Krause, Jr..General freight agent..... "

DENVER & RIO GRANDE

The following will give the organization of the Denver & Rio Grande effective March 1:

A. R. Baldwin....Receiver .....Denver, Colo.
J. Russell .....General manager..... "
W. E. Green.....Assistant general manager. "
Hy. McAllister, Jr.General counsel..... "
E. N. Clark.....General solicitor..... "
J. G. McMurry...Com. and val. counsel.... "
F. A. Wadleigh...Pass. traffic manager..... "
Fred Wild, Jr....Freight traffic manager.... "
W. M. Lampton..General freight agent..... "
E. R. Dickenson..General auditor..... "
R. F. Watkins...Treasurer ..... "
J. G. Gwyn.....Chief engineer..... "
Arthur Ridgway..Asst. chief engr. (valua.).. "
C. B. Hotchkiss..Assistant to receiver..... "
D. C. DeGraff....Assistant to receiver..... "

EL PASO & SOUTHWESTERN

The following appointments on the El Paso & Southwestern System are additional to those given in the *Railway Age* of March 5, page 741.

B. L. Birkholz....General agent.....New York.
F. W. Pullen.....General agent.....Chicago.
J. F. Hogan.....General agent.....San Francisco.
L. H. Trimble....Div. frt. and pass. agent..Tucson, Ariz.

FLORIDA EAST COAST

The new organization of the Florida East Coast, effective March 1, is as follows:

W. H. Beardsley.	President	New York.
W. R. Kenan, Jr.	Vice-president	"
J. P. Beckwith	Vice-president	St. Augustine, Fla.
W. A. Blount	V-pres. and gen. counsel	Pensacola, Fla.
J. E. Ingraham	Vice-president	St. Augustine, Fla.
F. W. Kirtland	Assistant to vice-president.	"
L. C. Haines	Treasurer	New York.
C. D. Boice	Secretary and purch agt	"
J. D. Rahner	General passenger agent	St. Augustine, Fla.
H. E. C. Hawkins.	General freight agent	"
T. V. Pomar	Comptroller	"
E. Ben Carter	Chief engineer	"
J. H. Owen	Gen. supt of trans	"
G. A. Miller	Supt. mot. pow. & mchy.	"
S. M. Loftin	General solicitor	Jacksonville, Fla.
A. V. S. Smith	General attorney	"

GEORGIA & FLORIDA

W. R. Sullivan, Langbourne M. Williams and J. F. Lewis, receivers, have announced the following as the organization of the Georgia & Florida, effective March 1:

D. F. Kirkland	General manager	Augusta, Ga.
G. F. Dickson	Gen. Supt	"
S. Baldwin	Chief engineer	"
W. C. Griffin	Supt. car service	"
W. H. Dyer	Supt. motive power	Douglas, Ga.
J. S. Douglas	Trainmaster	Augusta, Ga.
T. E. Harris	Traffic manager	"
W. D. Cook	Gen. frt. agent, rates	"
J. H. Conley	Auditor	"
M. T. Lanigan	Assistant auditor	"
W. O. Wall	General claim agent	"
S. W. Saye	Purchasing agent	"
W. Blanchard	Treasurer	"
Barrett & Hull	General counsel	"
W. H. Doughty, Jr.	Chief surgeon	"

LEHIGH & HUDSON RIVER

The following is the organization of the Lehigh & Hudson River, effective with the return of the property to private control:

Lewis A. Riley	President	Philadelphia, Pa.
Morris Rutherfurd	Vice-pres. and gen. mgr.	Warwick, N. Y.
William H. Sayer.	Secretary and treasurer	"
S. H. Benny	Asst. secretary	Philadelphia, Pa.
B. J. Stidworthy	Asst. treas. and paymaster.	Warwick, N. Y.
H. G. Pierson	Gen. frt. and pass. agent	"
F. F. Wildrick	Auditor	"
C. F. Merrill	Superintendent	"
J. J. Beattie	General Counsel	"
C. S. Beattie	Claims attorney	"
A. M. Holmes	Purchasing agent	"
Sam'l Meyers, Jr.	General storekeeper	"
R. T. Jaynes	Master mechanic	"
W. C. Muth	Trainmaster	"
F. S. Work	Chief dispatcher	"
C. F. Richards	Chief car inspector	Phillipsburg, N. J.
L. B. Myers, Jr.	Road foreman of engines	Warwick, N. Y.
J. E. Barrett	Engineer of maintenance	"
C. H. Bennett	Signal supervisor	"

MICHIGAN CENTRAL

The executive organization of the New York Central Lines was given in the *Railway Age* of February 27, page 659. The following will give the local organization of the Michigan Central:

H. D. Bronner	Vice-president	Detroit.
Henry Shearer	General manager	"
J. L. McKee	General supt	"
E. A. Wigren	Auditor	"
W. E. Hackett	Treasurer	"
P. G. Findlay	Freight traffic manager	"
O. R. Bromley	Gen. freight agent	"
F. R. Newman	Asst. gen. freight agent	"
N. D. Hoke	Asst. gen. freight agent	Buffalo.
R. Middleton	Dist. freight agent	St. Thomas.
L. W. Landman	Pass. traffic manager	Chicago.
C. C. Clark	General pass. agent	"
R. B. Holmes	Asst. gen. agent	"
C. H. Chevee	Asst. gen. pass. agent	Buffalo.
John C. Ranney	Div. pass. agent	Grand Rapids.
H. C. Carson	Div. pass. agent	Saginaw.

MISSOURI, KANSAS & TEXAS

In addition to the appointments on the Missouri, Kansas & Texas announced in the *Railway Age* of March 5, page 745, the following have been appointed:

C. E. Spooner	General auditor	Parsons, Kan.
R. P. Roach	Treasurer and paymaster	"

MISSOURI PACIFIC

The organization of the accounting department of the Missouri Pacific is announced as follows:

J. G. Drew	Vice-president	St. Louis.
F. P. Johnson	General auditor	"
T. M. Niven	Assistant general auditor	"
W. J. Wright	Assistant auditor	"
E. H. Lycett	Assistant auditor	"
W. H. Malcolm	Auditor, freight receipts	"
S. H. Bone	Asst. auditor freight rec.	"
H. H. McIntyre	Auditor, passenger receipts.	"
D. Laughlin	Auditor, pass. rec	"
C. B. Moore	Auditor, disbursements	"
G. A. Rust	Asst. auditor disbursements.	"
H. C. Abbey	Auditor station accounts	"
C. B. Milsom	General accountant	"
E. G. Trobaugh	Car accountant	"
C. E. Kammann	Assistant car accountant	"
H. C. Hale	Valuation accountant	"

NASHVILLE, CHATTANOOGA & ST. LOUIS

Passenger traffic appointments on the Nashville, Chattanooga & St. Louis are announced as follows:

W. I. Lightfoot	General pass. agent	Nashville, Tenn.
J. F. Gaffney, Jr.	Asst. gen. pass. agent	"
J. C. Galloway	Div. pass. agent	Memphis, Tenn.
G. B. Harris	Div. pass. agent	Atlanta, Ga.
E. J. Walker	Div. pass. agent	Chattanooga, Tenn
J. A. Thomas	General agent, passenger	Nashville, Tenn.
W. S. Snodell	Northern passenger agent	Chicago, Ill.
A. Rice King	Florida passenger agent	Jacksonville, Fla.
F. C. Sweat	Western passenger agent	St. Louis, Mo.
W. F. Reed	Manager, dining cars	Nashville, Tenn.

NORTHERN PACIFIC

The executive department organization of the Northern Pacific was given in the *Railway Age* of March 5, page 746. Other appointments, effective March 1, have been announced as follows:

R. W. Clark	Assist. to president	St. Paul, Minn.
D. F. Lyons	General solicitor	"

ACCOUNTING DEPARTMENT

F. W. Sweney	Comptroller	"
E. T. Dakin	General auditor	"
L. A. Behler	Assistant general auditor	"
G. J. Mayer	Assistant general auditor	"
William Richards.	Assistant general auditor	"
W. J. Stevenson.	Auditor, agencies	"
W. C. Pinger	Auditor, capital expendi	"
E. O. Parks	Auditor, disbursements	"
F. W. Stetekluh	Asst. auditor disburse	"
R. V. Onslow	Aud. frt. overcharge claims.	"
W. S. Tayler	Auditor freight receipts	"
A. L. Wielde	Asst. auditor frt. receipts	"
George Sherriff	Auditor passenger receipts	"
W. H. Rawlinson.	Assistant statistician	"
C. E. Billings	General accountant	"
C. S. Carter	Joint facility accountant	"
F. C. Sharood	Valuation accountant	"
M. P. Martin	Consulting auditor	Tacoma, Wash.
E. R. Wales	Western aud. and paymas	"

PURCHASING DEPARTMENT

F. G. Prest	Purchasing agent	St. Paul, Minn.
R. J. Elliott	Asst. purchasing agent	"
L. Crassweller	Asst. purchasing agent	Tacoma, Wash.
O. C. Wakefield	General storekeeper	St. Paul, Minn.
E. J. Myers	Asst. general storekeeper	"
S. H. Robson	Asst. general storekeeper	S. Tacoma, Wash.
F.V.Weisenburger.	Timber agent	St. Paul, Minn.

PENNSYLVANIA SYSTEM.

Northwestern Region

The following appointments have been made in the traffic department of the Pennsylvania System, Northwestern region, in addition to those announced in the *Railway Age* of February 20, pages 598 to 600:

C. E. Clapp	Division freight agent	Chicago
H. R. Griswold	" " "	G. Rapids, Mich.
J. M. Steenberg	" " "	Toledo, Ohio
E. T. Wood	" " "	Fort Wayne, Ind.
H. C. Oliver	" " "	Richmond, Ind.
Geo. W. Smith	Foreign freight agent	Chicago

PERE MARQUETTE

In addition to the appointments on the Pere Marquette announced in the *Railway Age* of March 5, page 746, the following is given as the organization of the accounting department:

C. S. Sikes	Vice-p. and general auditor.	Detroit, Mich.
J. O. Talbott	Assistant general auditor	"
A. C. Rhodes	Assistant auditor	"
K. A. Karlson	Assistant auditor	"
A. J. Anderson	Auditor, freight traffic	"
C. E. Connally	Asst. auditor frt. traffic	"
J. P. Doughty	Auditor disbursements	"
H. F. Brahany	Auditor, cap. expen	"
E. L. Mitten	Auditor passenger traffic	"
H. F. Farrell	Auditor overcharge claims	"
Glenn Warner	Engineering accountant	"
D. L. Harwood	Car accountant	"

PITTSBURGH AND LAKE ERIE.

The executive officers of the New York Central Lines were given in the *Railway Age* of February 27, page 660. The following will give the new organization of the Pittsburgh & Lake Erie:

J. B. Yohe	General manager	Pittsburgh Pa.
G. G. Minnick	Asst. general mgr.	" "
A. R. Raymer	Chief engineer	" "
L. H. Turner	Supt. motive power	" "
D. J. Redding	Asst. Supt. motive power	McKees Rcks., Pa.
S. Lynn	Master car builder	" " "
F. M. Brown	Superintendent	Pittsburgh, Pa.
J. B. Yohe, Jr.	"	" "
J. B. Nessle	Freight traffic manager	" "
E. E. Smith	Gen. passnger agent	" "
L. A. Lee	Supt. telegraph	" "
J. L. O'Toole	Supt. freight trans	" "
M. R. Clinton	Supt. car service	" "
E. H. Kennedy	Auditor	" "
E. B. Whisler	Freight claim agent	" "
C. M. Yohe	Acting Pur. agent	" "
J. C. Grooms	Real Estate & Claim Agt.	" "
W. M. Doulin	Treasurer	" "
C. W. Alleman	General storekeeper	McKees Rcks., Pa.

QUINCY, OMAHA & KANSAS CITY

The following appointments, effective March 1, have been announced by J. D. Farrington, superintendent of the Quincy, Omaha & Kansas City, with headquarters at Kansas City, Mo.:

A. J. Bandy	Gen. frt and pass. agent.	Kansas City, Mo.
W. R. Shrodes	Office asst. and pur. agent.	"
C. Woodcock	Auditor and cashier	"
J. C. Woods	Master mechanic	Milan, Mo.
W. R. Morelock	Train master	"
L. C. Wallace	Chief despatcher	"

TOLEDO & OHIO CENTRAL

The executive organization of the New York Central Lines was given in the *Railway Age* of February 27, page 659. The following appointments have been made on the Toledo & Ohio Central, the Zanesville & Western, the Kanawha & Michigan and the Kanawha & West Virginia:

F. B. Sheldon	Vice-president	Columbus, Ohio.
J. B. Wagner	Auditor	"
E. N. Bennett	Treasurer	"
H. E. Speaks	General manager	"

WESTERN MARYLAND

The following appointments on the Western Maryland, effective March 1, are additional to those given in the *Railway Age* of March 12, page 807:

M. K. Bostic	Spec. asst. to the pres.	Baltimore Md,
George P. Bagby	General solicitor	"
F. C. Uhlman	General auditor	"
H. R. Pratt	Chief engineer	"
D. Z. Dunott	Chief surgeon	"
J. E. Bond	Chief of police	"
K. E. Hamlin	Freight claim agent	"
H. A. Bruck	Real estate and tax agent	"
J. A. Peterson	Superintendent elevators	"
G. F. Wieseckel	Supt. maint. of equip	Hagerstown, Md.
E. R. Rouzer	Supt. trans	"
C. A. Steiner	Supt. wage bureau	"

Obituary

Frederick T. Hatch, consulting engineer of the Pennsylvania Railroad in charge of valuation matters with headquarters at St. Louis, Mo., and formerly chief engineer maintenance of way, Lines West, St. Louis system, died suddenly at his home in St. Louis on March 9 at the age of 64.

Harry T. Ruhl, engineer maintenance of way and structures of the Delaware & Hudson, died at his home in Albany, N. Y., on February 18. Mr. Ruhl was born in Buffalo Cross Roads, Pa., September, 1882. He received his education in Bucknell University, graduating in 1905. He then entered the engineering department of the Canadian Pacific as transitman on the location and construction of the La Belle branch. In 1907 he was transferred to the Toronto-Sudbury branch of the Canadian Pacific, where he served as engineer in charge of construction until the completion of that branch. In 1909, he became interested in maintenance work and was appointed senior transitman, District No. 1, of the Lake Superior division. Six months later he was made resident engineer, District No. 2, Lake Superior, with headquarters at Sudbury, Ont. In 1911, he was appointed resident engineer, District No. 2, Eastern division, with headquarters at Farnham, Que. In 1914, he went to the Canadian Government Railways as resident engineer, located at New Glasgow, N. S. In 1916, he was promoted to division engineer, with headquarters at Moncton, N. B., which position he held until June, 1917, when he became engineer maintenance of way and structures for the Delaware & Hudson at Albany.

ANATOLE MALLET

Anatole Mallet, the inventor of the compound locomotive which bears his name, died in Nice, France, in October, 1919. Mr. Mallet was born in 1837 at Carouge and was graduated in 1858 from the Central School of Arts and Manufactures in Paris. He was engaged in civil engineering work for several years, working on the Suez canal and later as engineer for a company which undertook dredging operations in Italy. His first work in mechanical engineering was done in 1867, when he devoted his attention to double expansion steam engines. The first application of this system was made in 1876 on a two-cylinder compound locomotive which operated on the line from Bayonne to Biarritz. This design effected a saving of 20 per cent in fuel over the standard types and placed the inventor in the foremost ranks of locomotive designers.

The great success of the compound locomotive led to a material increase in the size of the units and to the development of three and four-cylinder compound locomotives. It became evident that the limit of size of locomotives of rigid construction, especially on lines with sharp curves, would soon be reached. In order to permit of the use of large motive power units on lines with sharp curves and light track, Mr. Mallet designed the articulated type of locomotive, which has since been adapted to use on American roads with such great success.

Among the honors conferred upon Mr. Mallet were the Schneider prize, awarded to him by the French Society of Civil Engineers in 1902 and the annual prizes of the society in 1909 and 1911. He was made a Knight of the Legion of Honor in 1885 and promoted to officer in 1905. The Institute of Mechanical Engineers of London awarded him a gold medal in 1915.

In addition to carrying on his engineering work, Mr. Mallet took active part in the work of the French Society of Civil Engineers as editor of the Chronicle of the Bulletin of the Society, for which he wrote numerous technical notes and important memoirs.